

TRAINING MANUAL FOR FOOD SAFETY REGULATORS

Vol III – FOOD REGULATORY ENFORCEMENT & COMPLIANCE THROUGH INSPECTION

2010



THE TRAINING MANUAL FOR FOOD SAFETY REGULATORS WHO ARE INVOLVED IN IMPLEMENTING FOOD SAFETY AND STANDARDS ACT 2006 ACROSS THE COUNTRY

FOOD SAFETY & STANDARDS AUTHORITY OF INDIA
(MINISTRY OF HEALTH & FAMILY WELFARE)
FDA BHAVAN, KOTLA ROAD,
NEW DELHI – 110 002
Website: www.fssai.gov.in

INDEX

TRAINING MANUAL FOR FOOD SAFETY OFFICERS

Sr No	Subject	Topics	Page No
1	INSPECTION OF FOOD ESTABLISHMENTS, MANUFACTURING UNITS	<ul style="list-style-type: none"> • Food Regulatory Enforcement & Compliance through Inspection <ul style="list-style-type: none"> ➤ Regulatory Basis for effective quality & safety management system. ➤ Knowledge & Skill requirement for food Inspector ➤ Compliance and enforcement policy. ➤ Caution and Counselling ➤ Recognition of organization or agency for food safety audit (section 44) • Inspectional Requirements for Food business Operators. • General Inspection Procedures <ul style="list-style-type: none"> ➤ Food borne disease risk factors at food processing units ➤ Inspection of Food business system components ➤ Prerequisite plan ➤ Regulatory action plan ➤ Inspection closing, reporting & documentation ➤ Procedural Flow of Inspection of Food processing facility. • Biological inspection of establishments <ul style="list-style-type: none"> ➤ Raw material storage ➤ Manufacturing area ➤ Packaging & Storage of finished products ➤ Personnel Hygiene • Other Food related Standards/Acts Enforcing Agencies <ul style="list-style-type: none"> ➤ BIS, AGMARK (DMI), ➤ Essential Commodities Act 1954 ➤ Cold Storage Order 1980 ➤ Standards on Weights & Measures Act 1976 (Packaged Commodities) Rules 1977 ➤ Export(Quality Control & Inspection) Act 1963 ➤ Consumer Protection Act 1986 ➤ APEDA, MPEDA, Commodity Boards. 	2 to 9
2	SPECIAL ESTABLISHMENT INSPECTION	<ul style="list-style-type: none"> • Fruits & Vegetable Processing • Bakery Products Processing • Milk & Milk product Processing • Candy & Sweet processing Units • Chocolate & Cocoa processing • Fats & Oil Processing units • Frozen Food Establishments • Food canning plants • Beverage Industry • Meat & Meat products processing • Fish & Fish products processing • The Retail Meat Shops • Wholesale Food Store • Food Service & Distribution <ul style="list-style-type: none"> ➤ Open air markets, Retail Stores ➤ Food Service Establishments (Restaurants, Cafeterias & Catering establishments) • Food Warehouses 	10 to 14

A] Regulatory basis for effective quality and safety management systems*1) Applicable food law(s)*

The inspector and the inspection process must necessarily be empowered by food safety laws and regulations. The inspector must be thoroughly knowledgeable about these laws and regulations and about the scope of the authority vested in him/her. The inspector should have copies of all pertinent law(s) and regulations for consultation in case of any disagreement.

In the absence of laws and regulations to allow an inspector to implement a risk-based approach to food inspection, areas for improvement identified during the inspection can be raised as recommendations instead of non-compliances while legislation is reviewed.

2) Other pertinent regulation(s)

In addition to food law(s) and regulations, the inspector should be aware of other laws and regulations that may have food safety implications, such as environmental laws and regulations addressing such issues as sewage and waste disposal. Food processing, in general, is very water intensive, and this issue and the potential need to treat effluents may be an important consideration in areas where water is scarce.

There are food processing facilities that cater for export markets and therefore must comply with particular national or international food safety and quality regulations.

B] Knowledge and skill requirements for food inspectors

Food processing involves many disciplines because food matrices are extremely complex. In addition to proteins, carbohydrates, fats and minerals, the basic blocks of food, there are innumerable interactions between food components and with multiple external factors that may have an effect on the quality and safety of food. These factors may be microbiological, chemical, physical or sensory. Even human perception plays an important role in food quality. In addition, the ultimate objective of food inspection is consumer protection against food borne disease and fraud. Consequently, the modern food inspector must be a professional who has a solid background in food science and technology and in public health. Essential areas of knowledge and skill for the food inspector are the following:

1) Thorough knowledge of food law(s) and pertinent regulations

It is essential that the food inspector has a thorough knowledge of the law(s) and regulations governing the operation of food processing facilities and the corresponding inspection procedures. In addition, the inspector must know other pertinent regulations such as those dealing with environmental issues and workplace safety. Also of importance to product quality and safety are regulations affecting agricultural practices, food transportation and food distribution.

2) Background information on the field of food safety and quality

Inspectors must know and understand all elements of a quality and safety management system, the role these play in food safety and the way these elements interact with one another. Central to this understanding is knowledge of food processing operations, food microbiology and food chemistry.

3) Prerequisite sanitation, hygiene, and pest control practices

A thorough understanding of prerequisite programmes requires prior knowledge of the properties of various types of cleaning and sanitizing compounds, and their interactions with food matter, with each other and with other materials, particularly those materials

that equipment is made of (e.g. chlorine and steel). Moreover, it is important that the inspector is aware of the characteristics and effects of sanitizing compounds on target bacterial groups and the accepted limits for residues of such compounds in food. The inspector must also be knowledgeable about hygiene practices, including personnel hygiene, and must be able to convey this knowledge to management and employees so that the objectives of relevant regulations are easily understood. The field of pest control products and practices is another area in which inspectors must be knowledgeable. Most pest control products can be deleterious if they find their way into food. The inspector should be able to communicate this knowledge to food processors.

4) HACCP principles

Although this topic does not specifically cover Hazard Analysis and Critical Control Point (HACCP) systems, the HACCP approach is risk-based and its elements are helpful to use during an inspection. As such, it should be thoroughly understood by the inspector. Furthermore, the inspector should use inspections as an opportunity to promote HACCP to businesses. Ideally, food inspectors will have taken courses and been certified in the application of HACCP.

5) Inspection techniques

Food inspection, as approached by this topic, is a review of the food safety and quality aspects of a primary processing operation or a food processing facility. It is expected that the topic will provide the inspector with sufficient insight into inspection techniques to properly fulfil his/her task.

6) Sampling techniques for product testing

Knowledge of sampling techniques, particularly aseptic techniques, and of sample handling for transportation to a laboratory are essential to guarantee the integrity of samples taken for verification. In addition, the inspector must have a good knowledge of testing techniques so that he/she can make informed decisions about sampling methods and properly interpret the results of testing.

7) Compliance verification skills

Beyond academic and practical knowledge of food regulations, food processing, food microbiology and chemistry, it is essential that inspectors have sufficient professional experience and criteria to be able to focus the inspection on the truly important factors affecting food product safety: the risk factors associated with food-borne disease.

8) Communication and other skills

The food inspector must also possess good communication skills to enable him/her to adequately convey technical and regulatory information regarding safe food handling to others. In addition, the inspector must have professionalism and confidence and exhibit dignity and integrity.

9) Original training certificate and required certificate updates

The food industry is in constant change. New food processing technologies, new controls, new equipment and new ingredients constantly come onto the market, as do new testing methods. The food inspector needs appropriate training and must have a diploma/certificate attesting to his/her professional standing and must attend certified continuing education courses to stay up to date with new developments. Mentoring of new inspectors by experienced colleagues is highly desirable.

C] Compliance and enforcement policy

1) Responsibilities

Food regulations are mandatory and must be complied with by the processor and enforced by the inspector and food safety authorities in all cases, because violations constitute offences. Failure by the inspector or other food control authorities to enforce regulations at all times, besides being illegal, defeats the purpose of having a food control system and promotes non-compliance across the industry by example. It would be unfair to demand compliance from one processor and not from others. The inspector's primary responsibility is to protect the consumer by ensuring compliance with food safety laws and regulations, given that the public's well-being is the ultimate objective of a national food safety system. Producers and processors, in contrast, are in business to make a profit and that priority may well impair their perception of accountability to society. Therefore, it is also the inspector's duty to remind producers and processors of their responsibility to produce safe foods. This message can be made more relevant by explaining to food producers and processors that the safety of their products not only fulfils their responsibility towards society – something that may seem idealistic and ethereal – but may also be determinant in developing their business. For example, the adverse effect of bad publicity and the use of favourable publicity as a marketing tool could be described. Compliance with guidelines and voluntary standards, on the other hand, depends on the good will and disposition of the processor and should be strongly encouraged by the inspector.

2) Principles

The modern food inspector must think of himself/herself as a reviewer of the food safety control measures and a contributor to their improvement. Control measures must individually evolve continuously in response to technological advances and to the establishment's own experience, and as part of what should be an equally evolving national food control system. Such improvements can also be very advantageous to the processor from a marketing standpoint. Product safety and quality are characteristics that can be exploited to gain advantage in the marketplace. The food inspector is in a unique position to convey these messages to food producers and processors. **Creating awareness about food safety and quality among food producers and processors is as important an element of food inspection as verifying compliance with regulations.** Improvements to a quality and safety management system are almost always possible and attainable if the processor is willing to progress and the inspector is able to assist.

A generalized trend in modern food processing safety and quality assurance systems is the concept of statistical process control (SPC), which is based on continuous improvement. Although this topic has dealt with SPC only marginally, when discussing critical limits, **disseminating the concept of continuous improvement of the quality and safety management system and actively contributing to such improvement must be integral parts of food inspections.**

Caution & Counselling

If the Food Safety Officer, on inspection identifies any contraventions of particular provisions of FSS Act by any food business operator, then he can issue 'caution' to that food business operator stating the regulation to be followed for the contraventions & can also counsel them for various preventive & corrective actions to be taken for that contraventions.

Recognition of organization or agency for food safety audit (section 44)

The Food Authority may recognise any organization or agency for the purposes of food safety audit and checking compliance with Food Safety Management Systems required under this Act or the rules and regulations made there under.

A detailed guideline on various requirements under Good Hygiene & Sanitary Practices (GHP) are laid down in schedule 4 of the Licensing & Registration regulation document.

INSPECTIONAL REQUIREMENTS FOR FOOD BUSINESS OPERATOR (FBO)

Inspectional Requirements for All Food Business operators

The establishment in which food is being handled, processed, manufactured, packed, stored, and distributed by the food business operator and the persons handling them should conform to the sanitary and hygienic requirement, food safety measures and other standard as specified below. It shall also be deemed to be the responsibility of the food business operator to ensure adherence to necessary requirements.

In addition to the requirements specified below, the food business shall identify steps in the activities of food business, which are critical to ensuring food safety, and ensure that adequate safety procedures are identified, implemented, maintained and reviewed periodically.

1. LOCATION AND SURROUNDINGS

- 1.1 Food Establishment shall be located away from environmentally polluted areas and industrial activities which produce disagreeable or obnoxious odour, fumes, excessive soot, dust, smoke, chemical or biological emissions and pollutants, and which pose a serious threat of contaminating food; areas subject to flooding; areas prone to infestations of pests; and areas where wastes, either solid or liquid, cannot be removed effectively.
- 1.2 The premise should not be used for residential purpose, nor shall it has or capable of having direct access inside the premise.

2. LAYOUT AND DESIGN OF FOOD ESTABLISHMENT PREMISES

- 2.1 The layout of the food establishment shall be such that food preparation / manufacturing process are not subject to cross-contamination from viz. receiving, pre-processing (viz. packaging, dishing / portioning of ready-to-eat food). To prevent cross contamination, the activities shall be totally compartmentalized and strict measures should be taken to see that material movement happens only in one direction without any backward flow and any mixing up of various activities. Area occupied by machinery shall not be more than 50% of the manufacturing area.
- 2.2 The floor of food processing / food service area shall be made of impervious, non-absorbent, washable and non-toxic materials. Floor surfaces shall remain dry and maintained in a sound condition so that they are easy to clean and where necessary, disinfect. Floors shall be sloped appropriately to facilitate adequate drainage and the drainage shall flow in a direction opposite to the direction of food preparation / manufacturing process flow. The openings of the drains to be thoroughly covered with wire mesh to prevent insects and rodents from entering the processing area.
- 2.3 The walls shall be made of impervious, non-absorbent, washable and non-toxic materials and require a smooth surface easy to clean up to a height appropriate for the operations and wherever necessary, disinfect.
- 2.4 Ceilings and overhead fixtures shall be designed, constructed, finished and maintained so as to minimize the accumulation of dirt, condensation and growth of undesirable moulds and shedding of paint or plaster particles. Sufficient number of Windows and exhaust openings shall be provided to minimize accumulation of dirt.
- 2.5 Windows, doors & all other openings to outside environment shall be well screened with wire-mesh or insect-proof screen as applicable to protect the premise from fly and other

insects / pests / animals & the doors be fitted with automatic closing springs. The mesh or the screen should be type which can be easily removed for cleaning.

2.6 Doors shall be made of smooth and non-absorbent surfaces so that they are easy to clean and wherever necessary, disinfect.

3. EQUIPMENT

3.1 Equipment and containers that come in contact with food and used for food handling, storage, preparation, processing, packaging and serving shall be made of corrosion free materials, which do not impart any toxicity to the food material. Equipment and utensils used in the preparation of food shall be kept at all times in good order and repair and in a clean and sanitary condition. No such utensil or container shall be used for any other purpose.

3.2 Every utensil or container containing any food or ingredient of food intended for sale shall at all times be either provided with a proper fitting cover/lid or with a clean gauze net or other material of texture sufficiently fine to protect the food completely from dust, dirt and flies and other insects.

3.3 No utensil or container used for the manufacture or preparation of or containing any food or ingredient of food intended for sale shall be kept in any place in which such utensil or container is likely by reason of impure air or dust or any offensive, noxious or deleterious gas or substance or any noxious or injurious emanations, exhalation, or effluvium, to be contaminated and thereby render the food noxious.

3.4 Equipment shall be such located, designed and fabricated so that it permits necessary maintenance and cleaning functions as per its intended use and facilitates good hygiene practices inside the premise including monitoring and audit.

3.5 Appropriate facilities for the cleaning and disinfecting of equipments and instruments especially cleaning in place (CIP) system to be adopted.

3.6 Equipment and containers for waste, by-products and inedible or dangerous substances, shall be specifically identifiable and suitably constructed.

3.7 Containers used to hold cleaning chemicals and other dangerous substances shall be identified and stored separately to prevent malicious or accidental contamination of food.

3.8 To put in place, if required, an adequate waste water disposal system / effluent treatment plant as approved by State Pollution Control Board

3.9 All items, fittings and equipment that touch or come in contact to food must be:

- kept in good condition in a way that enables them to be kept clean and wherever necessary, to be disinfected
- Chipped enamelled containers will not be used. Stainless /aluminium / glass containers, mugs, jugs, trays etc. suitable for cooking and storing shall be used. Brass utensils shall be frequently provided with in lining

4. FACILITIES

4.1 Water supply

4.1.1 Only potable water, meeting the requirements of Bureau of Indian Standards specifications, with appropriate facilities for its storage, distribution shall be used as an ingredient and also for food handling, washing, processing and cooking. Water storage tanks shall be cleaned periodically and records of the same shall be maintained in a register.

4.1.2 Non potable water can be used provided it is intended only for cooling of equipment, steam production, fire fighting & refrigeration equipment and provided that pipes installed for this purpose preclude the use of this water for other purposes and present no direct or indirect risk of contamination of the raw material, dairy products or food products so processed, packed & kept in the premise.

4.1.3 Non potable water pipes shall be clearly distinguished from those in use for potable water.

4.2 For Cleaning Utensils / Equipments

Adequate facilities for cleaning, disinfecting of utensils and equipments shall be provided. The facilities must have an adequate supply of hot and cold water.

4.3 Washing of Raw materials

Adequate facilities for washing of raw food should be provided. All basins (or other facilities) for washing food items must have an adequate supply of hot and/or cold water. The water shall at least be of potable in nature. These facilities must be kept clean and, where necessary, disinfected. Sinks which are used for washing raw foods shall be kept separate and that should not be used for washing utensils or any other purposes.

4.4 Ice and Steam

Ice and steam used in direct contact with food shall be made from potable water and shall comply with requirements specified under 4.1.1. Ice and steam shall be produced, handled and stored in such a manner that no contamination can happen

4.5 Drainage and waste disposal

4.5.1 The disposal of sewage and effluents (solid, liquid and gas) shall be in conformity with requirements of Factory / Environment Pollution Control Board. Adequate drainage, waste disposal systems and facilities shall be provided and they shall be designed and constructed in such manner so that the risk of contaminating food or the potable water supply is eliminated.

4.5.2 Waste (hazardous) storage shall be located in such that it does not contaminate the food process, storage areas, the environment inside and outside the food establishment and waste shall be kept in covered containers and shall not be allowed to accumulate in food handling, food storage, and other working areas.

4.5.3 Periodic disposal of the refuse / waste be made compulsory. No waste shall be kept open inside the premise and shall not be discharged outside the premise, on the road or drainage system.

4.5.4 Proper care shall be taken while disposing plastic /metal / glass materials, bags, containers and others which are not environment friendly.

4.5.5 Food waste and other waste materials shall be removed periodically from the place where food is being handled or cooked or manufactured to avoid building up. A refuse bin of adequate size with a pedal operated cover shall be provided in the premises for collection of waste material. This shall be emptied and washed daily with a disinfectant and dried before next use.

4.6 Personnel facilities and toilets

- 4.6.1 Personnel facilities shall include adequate means of proper washing and drying of hands before touching food materials including wash basins and a supply of hot and /or cold water as appropriate; separate lavatories, of appropriate hygienic design, for males and females separately; and adequate changing facilities for personnel and such facilities shall be suitably located so that they do not open directly into food processing, handling or storage areas.
- 4.6.2 Number of toilets depends on the number of employees (male /female) in the establishment and they should be made aware of the cleanliness requirement while handling food.
- 4.6.3 Rest and refreshments rooms shall be separate from food process and service areas and these areas shall not lead directly to food production, service and storage areas.
- 4.6.4 A display board mentioning do's & don'ts for the workers shall be put up inside a prominent place in the premise in English or in local language for everyone's understanding

4.7 Air quality and ventilation

Ventilation systems natural and /or mechanical including air filters, exhaust fans, wherever required, shall be designed and constructed so that air does not flow from contaminated areas to clean areas.

4.8 Lighting

Adequate natural or artificial lighting shall be provided to the food establishment, to enable the undertaking to operate in a hygienic manner. Lighting fixtures must wherever appropriate, be protected to ensure that food is not contaminated by breakages.

5. FOOD OPERATIONS AND CONTROLS

5.1 Procurement of raw materials

- 5.1.1 No raw material or ingredient thereof shall be accepted by an establishment if it is known to contain parasites, undesirable micro-organisms, pesticides, veterinary drugs or toxic items, decomposed or extraneous substances, which would not be reduced to an acceptable level by normal sorting and/or processing.
- 5.1.2 In addition the raw materials, food additives and ingredients, wherever applicable, shall conform to the Regulations and regulations laid down under the Act.
- 5.1.3 Records of raw materials, food additives and ingredients as well as their source of procurement shall be maintained in a register for inspection.

5.2 Storage of raw materials and food

- 5.2.1 Food storage facilities shall be designed and constructed to enable food to be effectively protected from contamination during storage; permit adequate maintenance and cleaning, to avoid pest access and accumulation.

- 5.2.2 Cold Storage facility shall be provided to raw processed / packed food according to the type and requirement.
- 5.2.3 Segregation shall be provided for the storage of raw, processed, rejected, recalled or returned materials or products. Such areas, materials or products shall be suitable if marked and secured. Raw materials and food shall be stored in separate areas from printed packaging materials, stationary, hardware and cleaning materials / chemicals.
- 5.2.4 Raw food, particularly meat, poultry and seafood products shall be cold stored separately from the area of work-in-progress, processed, cooked and packaged products. The conditions of storage in terms of temperature and humidity requisite for enhancing the shelf life of the respective food materials / products shall be maintained.
- 5.2.5 Storage of raw materials. Ingredients, work-in-progress and processed / cooked or packaged food products shall be subject to FIFO (First in, First Out), FEFO (first expiry first out) stock rotation system.
- 5.2.6 Stock rotation system.
- 5.2.7 Containers made of non-toxic materials shall be provided for storage of raw materials, work-in-progress and finished / ready to serve products. The food materials shall be stored on racks / pallets such that they are reasonably well above the floor level and away from the wall so as to facilitate effective cleaning and prevent harbouring of any pests, insects or rodents.

5.3 Food Processing / Preparation, Packaging and Distribution / Service

5.3.1. Time and temperature control

- 5.3.1.1 The Food Business shall develop and maintain the systems to ensure that time and temperature is controlled effectively where it is critical to the safety and suitability of food. Such control shall include time and temperature of receiving, processing, cooking, cooling, storage, packaging, distribution and food service upto the consumer, as applicable.
- 5.3.1.2 Whenever frozen food / raw materials are being used / handled / transported, proper care should be taken so that defrosted / thawed material shall not be stored back and after opening for future use.
- 5.3.1.3 Such systems shall also specify tolerance limits for time and temperature variations and the records thereof shall be maintained in a register for inspection.
- 5.3.1.4 Wherever cooking is done on open fire, proper outlets for smoke/steam etc. like chimney, exhaust fan etc. shall be provided.

5.4 Food Packaging

- 5.5.1 Packaging materials shall provide adequate protection for all food products to prevent contamination, damage and shall accommodate required labelling as laid down under the FSS Act & the Regulations there under.
- 5.5.2 Only Food grade packaging materials to be used. For packaging materials like aluminium plastic and tin, the standards to be followed are as mentioned under the FSS Regulations and rules framed there under.

- 5.5.3 Packaging materials or gases where used, shall be non-toxic and shall not pose a threat to the safety and suitability of food under the specified conditions of storage and use.

5.5 Food Distribution / Service

- 5.5.1 An appropriate supply chain needs to be incorporated in the system to minimize food spoilage during transportation Processed / packaged and / or ready-to-eat food shall be adequately protected during transportation and / or service.
- 5.5.2 Temperatures and humidity which is necessary for sustaining food safety and quality shall be maintained. The conveyances and /or containers shall be designed, constructed and maintained in such that they can effectively maintain the requisite temperature, humidity, atmosphere and other conditions necessary to protect food Conveyances and / or containers used for transporting / serving foodstuffs shall be non toxic, kept clean and maintained in good condition in order to protect foodstuffs from any contamination.
- 5.5.3 Receptacles in vehicles and / or containers shall not be used for transporting anything other than foodstuffs where this may result in contamination of foodstuffs. Where the same conveyance or container is used for transportation of different foods, or high risk foods such as fish, meat, poultry, eggs etc., effective cleaning and disinfections shall be carried out between loads to avoid the risk of cross-contamination. For bulk transport of food, containers and conveyances shall be designated and marked for food use only and be used only for that purpose.

6. Management and Supervision

- 6.1 A detailed Standard Operating Procedure (SOP) to be developed for proper management which in turn would help in identifying any problem at exact point, so the course of damage control would be faster
- 6.2 The Food Business shall ensure that technical managers and supervisors have appropriate qualifications, adequate knowledge and skills on food hygiene principles and practices to be able which shall enable them to ensure food safety and quality of its products, judge food hazards, take appropriate preventive and corrective action, and to ensure effective monitoring and supervision.

7 Food Testing Facilities

- 7.1 A well equipped, modern laboratory for testing of food materials / food for physical, microbiological and chemical analysis in accordance with the specification/standards laid down under the rules and regulations shall be in place preferably inside the premise for regular / periodic testing and when ever required.
- 7.2 In case of any suspicion or possible contamination, food materials / food shall be tested before dispatch from the factory.
- 7.3 If there is no in house laboratory facility, then regular testing shall be done through an accredited laboratory. In case of complaints received and if so required, the company shall voluntarily do the testing either in the in-house laboratory or from a designated lab outside.

8 Audit, Documentation and Records

- 8.1 A periodic audit of the whole system according to the SOP be done to find out any fault / gap in the GMP / GHP system
- 8.2 Appropriate records of food processing / preparation, production / cooking, storage, distribution, service, food quality, laboratory test results, cleaning and sanitation, pest control and product recall shall be kept and retained for a period of one year or the shelf-life of the product, whichever is more.

9 SANITATION AND MAINTENANCE OF ESTABLISHMENT PREMISES

9.1 Cleaning and maintenance

- 9.1.1 A cleaning and sanitation programme shall be drawn up and observed and the record thereof shall be properly maintained, which shall indicate specific areas to be cleaned; and cleaning frequency; cleaning procedure to be followed, including equipment and materials to be used for cleaning. Equipments used in manufacturing to be cleaned and sterilized after each use at the end of the day.
- 9.1.2 Cleaning chemicals shall be handled and used carefully in accordance with the instructions of the manufacturer and shall be stored separately away from food materials, in clearly identified containers, to avoid any risk of contaminating food.
- 9.1.3 Preventive maintenance of equipment, machinery, building and other facilities shall be carried out regularly as per the instructions of the manufacturer, to prevent any hazards from entering into the food while being processed or packed or served. Non-toxic, edible grade lubricants shall be used.

9.2 Pest Control Systems

- 9.2.1 Food establishment shall be kept in good repairing condition to prevent pest access and to eliminate potential breeding sites. Holes, drains and other places where pests are likely to gain access shall be kept in sealed condition or fitted with mesh / grills / claddings as required and animals, birds and pets shall not be allowed to enter into the food establishment areas/ premises.
- 9.2.2 Food materials shall be stored in pest-proof containers stacked above the ground and away from walls.
- 9.2.3 Pest infestations shall be dealt with immediately and without adversely affecting the food safety or suitability. Treatment with permissible chemical, physical or biological agents, within the permissible limits, shall be carried out without posing a threat to the safety or suitability of food. Records of pesticides / insecticides used along with dates and frequency shall be maintained.

10 PERSONAL HYGIENE

10.1 Health Status

- 10.1.1 Personnel known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted through food, shall not be allowed to enter into any food handling area if there is a likelihood of their contaminating food. The Food Business shall develop system, whereby any person so affected, shall immediately report illness or symptoms of illness to the management and medical examination of

a food handler shall be carried out apart from the periodic checkups, if clinically or epidemiologically indicated.

10.1.2 Arrangements shall be made to get the food handlers / employees of the establishment medically examined once in a year to ensure that they are free from any infectious, contagious and other communicable diseases. A record of these examinations signed by a registered medical practitioner shall be maintained for inspection purpose.

10.1.3 The factory staff shall be compulsorily inoculated against the enteric group of diseases once a year and a record towards that shall be kept for inspection.

10.1.4 In case of an epidemic, all workers to be vaccinated irrespective of the yearly vaccination.

10.2 Personal Cleanliness

10.2.1 Food handlers shall maintain a high degree of personal cleanliness. The food business shall provide to all food handlers with adequate and suitable clean protective clothing, head covering, face mask, gloves and footwear and the food business shall ensure that the food handlers at work wear only clean protective clothes, head covering and footwear every day.

10.2.2 Food handlers, with any cut or wounds in their person, shall not come in direct contact with food or food contact surfaces.

10.2.3 Food handlers shall always wash their hands with soap and clean potable water, disinfect their hands and then dry with hand drier or clean cloth towel or disposable paper at the beginning of food handling activities; immediately after using the toilet; and after handling raw food or any contaminated material, tools, equipment or work surface, where this could result in contamination of other food items.

10.3 Personal Behaviour

10.3.1 Food handlers engaged in food handling activities shall refrain themselves from smoking; spitting; chewing or eating; sneezing or coughing over any food whether protected or unprotected food and eating in food preparation and food service areas.

10.3.2 The food handlers should trim their nails and hair periodically, do not encourage or practice unhygienic means while handling food.

10.3.3 Persons working directly with and handling raw materials or food products shall maintain high standards of personal cleanliness at all times. In particular:

- a) they shall not smoke, spit, eat or drink in areas or rooms where raw materials and food products are handled or stored;
- b) wash their hands at least each time work is resumed and whenever contamination of their hands has occurred; e.g. after coughing / sneezing, visiting toilet, using telephone, smoking etc.

- c) avoid certain hand habits - e.g. scratching nose, running finger through hair, rubbing eyes, ears and mouth, scratching beard, scratching parts of bodies etc.- that are potentially hazardous when associated with handling food products, and might lead to food contamination through the transfer of bacteria from the employee to product during its preparation. When unavoidable, hands should be effectively washed before resuming work after such actions.

10.3.4 Food handlers shall not wear any belonging such as rings, bangles, jewellery, watches, pins and other items that pose a threat to the safety and suitability of food.

10.4 Visitors

10.4.1 Generally visitors should be discouraged to go inside the food handling areas. However, proper care has to be taken to ensure that food safety & hygiene is not getting compromised due to visitors in the floor area.

10.4.2 The Food Business shall ensure that visitors to its food manufacturing, cooking, preparation, storage or handling areas must wherever appropriate, wear protective clothing, footwear and adhere to the other personal hygiene provisions envisaged in this section.

11 PRODUCT INFORMATION AND CONSUMER AWARENESS

All packaged food products shall carry a label and requisite information shall be there as per provisions of Food Safety & Standards Act, 2006 and Regulations & Regulations made there under so as to ensure that adequate and accessible information is available to the next person in the food chain to enable them to handle, store, process, prepare and display the food products safely and correctly and that the lot or batch can be easily traced and recalled if necessary.

Routine supervision and checks should be done to ensure that food hygiene and food safety procedures are being carried out effectively.

GENERAL INSPECTION PROCEDURES

1. Introduction

Risk-based inspection starts with the consideration of hazards associated with the food and a review of the control measures in place to determine if they are adequate.

Food-borne disease risk factors at a typical processed food packing station.

- Incoming raw material contaminated with pesticide residues and/or enteric pathogens.
- Contaminated wash water.
- Poor design of facility: toilets open into packing area, packing station open to dust, Poor drainage of floor, floors and/or walls are cracked or absorb water.
- Presence of pests or other animals.
- Sick employees or staff.
- Lack of personal hygiene (e.g. dirty clothes, shoes), failure to wash hands or improper washing.
- Dirty boxes/crates.
- Recontamination during transportation to market.

In order to address the identified food-borne disease risk factors, the quality and safety management system may require the items showed below.

Items required for the quality and safety management system of a typical food processing unit.

- Management (i.e. the operation supervisor) understands the importance and objectives of the controls in place in the business and is able to explain them to labourers. He/she has received training.
- Raw material come from properly managed fields (regulations on pesticide use and Withdrawal periods are observed) and irrigation water that is clean and free of enteric bacteria is used. Pre-qualification of RM providers is required and periodic verification visits are made.
- Cattle and other animals are excluded from processing units.
- Staff have been trained to an appropriate standard in food hygiene and personal hygiene.
- Employees are healthy; sick employees (especially those with enteric diseases) are excluded from food handling activities and the processing environment.
- There are toilets and hand washing facilities separated from the packing area and employees have been instructed about proper hand washing.
- Employees properly wash their hands after exiting the facility and re-entering, and after using the toilet.
- Employees wear clean clothes.
- The facility is free of dust, pests (cockroaches, flies, rodents, etc.) and other animals (cats, dogs, birds, etc.).
- The packing area is screened to keep insects and animals out.
- The wash water is potable.
- A high enough level of chlorine (previously determined) is maintained in the fruit wash tank at all times (requires periodic monitoring throughout the day).
- The chlorine level in the wash water is periodically checked and readjusted as needed.

- The boxes or crates being used are new or properly washed and sanitized if reused.
- The fruit is kept from being contaminated during transportation.

Furthermore, having established the quality and safety management system, it is imperative that management actively promote and monitor compliance. Besides supervision, management may enhance compliance by posting signs reminding personnel to wash their hands and to indicate the level of chlorine to be maintained in the wash tank, and by periodically sending water samples for microbiological analysis (especially when using water from wells or other private sources).

2. Inspection of food business system components

The Food Safety Officer must prepare for an inspection. If a full HACCP system is in place then an audit (assessment/evaluation) should be performed. Preparation includes consulting the food authority's records to gain an insight into the background of the operation to be inspected, its history of compliance and the product(s) it handles. This advance knowledge will accomplish the following.

- Help the Food safety Officer to prepare a list of potential food-borne disease risk Factors Identified for the type of product and facility to be inspected.
- Help the Food safety Officer to prepare the necessary inspection wear (unless it is provided by the establishment), tools and equipment.
- Help the Food safety Officer to make an adequate time allocation for the inspection based on the size and complexity of the operation.
- Inform the Food safety Officer about the registration status, the identification number of the facility, and, hopefully, the name(s) of the person(s) to communicate with before, during and, if necessary for follow-up, after the inspection.

Preparation also involves taking care of personal aspects such as obtaining protective clothing (unless provided by the inspected establishment), and preparing the necessary equipment (e.g. flashlight, thermometer), sampling tools, note-taking materials and official forms.

3. Organization of the inspection

The Food Safety Officer must consider the task at hand and organize each inspection. Unless the inspection is a follow-up to a complaint or known violation, in which case a non-announced visit is in order, establishments should be notified of inspections in advance so that management will be available to accompany the Food Safety Officer during the inspection and the necessary records will be available.

The Food safety Officer should plan an opening meeting to get to know the management, explain the objective and scope of the inspection and the procedure to be followed, go Over the relevant regulations, review existing records, discuss the quality and safety management system and ask pertinent questions. This should be followed by a walk-through to assess hazards and the associated controls and to observe the performance of and talk to members of staff and floor personnel. Finally, an exit meeting (Counselling) should allow an opportunity to go over non-compliance and violations, suggest solutions and agree on a time frame for corrections.

Organization of the inspection.

- Notify establishment in advance (except for follow-up inspections).
- Consult the establishment's records.
- Prepare clothing, equipment, tools and official forms.
- Schedule an opening meeting.
- Conduct a walk-through (counter to product flow).
- Plan a closing meeting (Caution/Counselling).

4. Authorization, rights and responsibilities

The Food Safety officer and assistants, if any, must be properly authorized to enter the facility and conduct the inspection. The Food Safety Officer must produce official proof of his/her identity and affiliation and those of any assistants at the beginning of the inspection.

The establishment has the right to demand such identification, to be informed of the law and regulations empowering the Food Safety Officer, and to ask questions and defend its procedures and practices. The establishment also has the responsibility to open the relevant records to the Food safety Officer and provide pertinent information upon the Food Safety Officer's request.

5. Prerequisite plan

The prerequisite plan consists of various aspects that some national legislative bodies group under "Good Hygienic Practices" (GHPs) and "Good Manufacturing Practices" (GMPs). Some of the main aspects covered under GHPs and GMPs include:.

Some general components and considerations of the prerequisite plan.

1) Plant construction and equipment programme

This component of the prerequisite plan addresses physical aspects of the primary production or food processing facility and their maintenance. It begins with the facility's surroundings, as these have a bearing on such environmental issues as air quality and presence of pests, and the general layout. Then it proceeds to building materials and structural characteristics, facility maintenance, design and materials of equipment and utensils – aspects that influence ease of cleaning and sanitation – maintenance and calibration schedules, and general operational status.

2) Standard Operating Procedures (SOPs)

Standard Operating Procedures (SOPs) describe how critical processing operations such as heating or cooling, instituted with the purpose of addressing a food-borne disease risk factor, are to be carried out.

3) Sanitary Standard Operating Procedures (SSOPs)

Sanitary Standard Operating Procedures (SSOPs) describe how, with what and how frequently the facility and equipment must be cleaned and sanitized, and how the effectiveness of cleaning and sanitizing will be ascertained.

4) Pest control programme

The pest control programme describes the measures taken to prevent pests from entering the establishment and premises, and the procedures followed periodically for controlling those pests that may have gained access. It must include a description of the training required of pest control operators.

5) Personnel hygiene

This aspect includes the facility's policy regarding sick workers, the employees' general appearance of cleanliness, the clothing they wear and the policy regarding hand washing. It also includes employees' facilities (toilets, hand washing stations, showers, locker rooms and eating areas)

6) Training programme

The Food Safety Officer must take note of the facility's policy regarding training of management, staff, floor labourers and other employees and must examine the training records. These should include academic, on-the-job and continuing education training. The frequency and level of training for each step in the establishment's organizational structure should also be reviewed.

7) Customer complaints and handling

This aspect covers the establishment's policy concerning consumer complaints and follow-up. Records of such complaints should be available, as well as of the action taken to address them (including compensation when applicable).

8) Supplier specifications and control

Supplier specifications for all raw materials received by the primary operation or processing plant, including packaging materials, must be available. The specifications should address food-borne disease risk factors inherent to such materials. When relevant, evidence of supplier compliance with specifications, such as copies of certification and laboratory analyses, should be at hand.

9) Record keeping

The establishment must have implemented a system for keeping records of all actions taken to address identified risk factors for food-borne disease. These records should be kept at the establishment and be available during inspections.

6. Regulatory action plan

The regulatory action plan lists the regulations that the establishment must comply with. It includes product and process standards (if the product is standardized), ingredient and packaging requirements (if any), including food additives, the controls that are implemented to ensure compliance with the standard, and the labelling requirements.

1) Product and process standards

As part of the regulatory action plan, the establishment must have at hand any standard(s) that are applicable to the processes used or products manufactured by the facility, provided such standards are mandatory. If there are such mandatory standards, the regulatory action plan must describe the controls that are in place to ensure compliance with the standard(s).

2) Ingredients and packaging materials

The regulatory action plan must describe the controls that are in place to ensure that all ingredients and packaging materials comply with regulatory requirements.

3) Labelling

The regulatory action plan also describes the controls that are in place to ensure that labelling of products (and codes and dates when required) complies with regulations,

7. HACCP plan, traceability and recall plan

1) HACCP plan

If the facility follows the HACCP system and has a HACCP plan in place, it should be available to the Food Safety Officer. If a HACCP is in place, an audit will be undertaken, not an inspection.

2) Traceability and recall programme

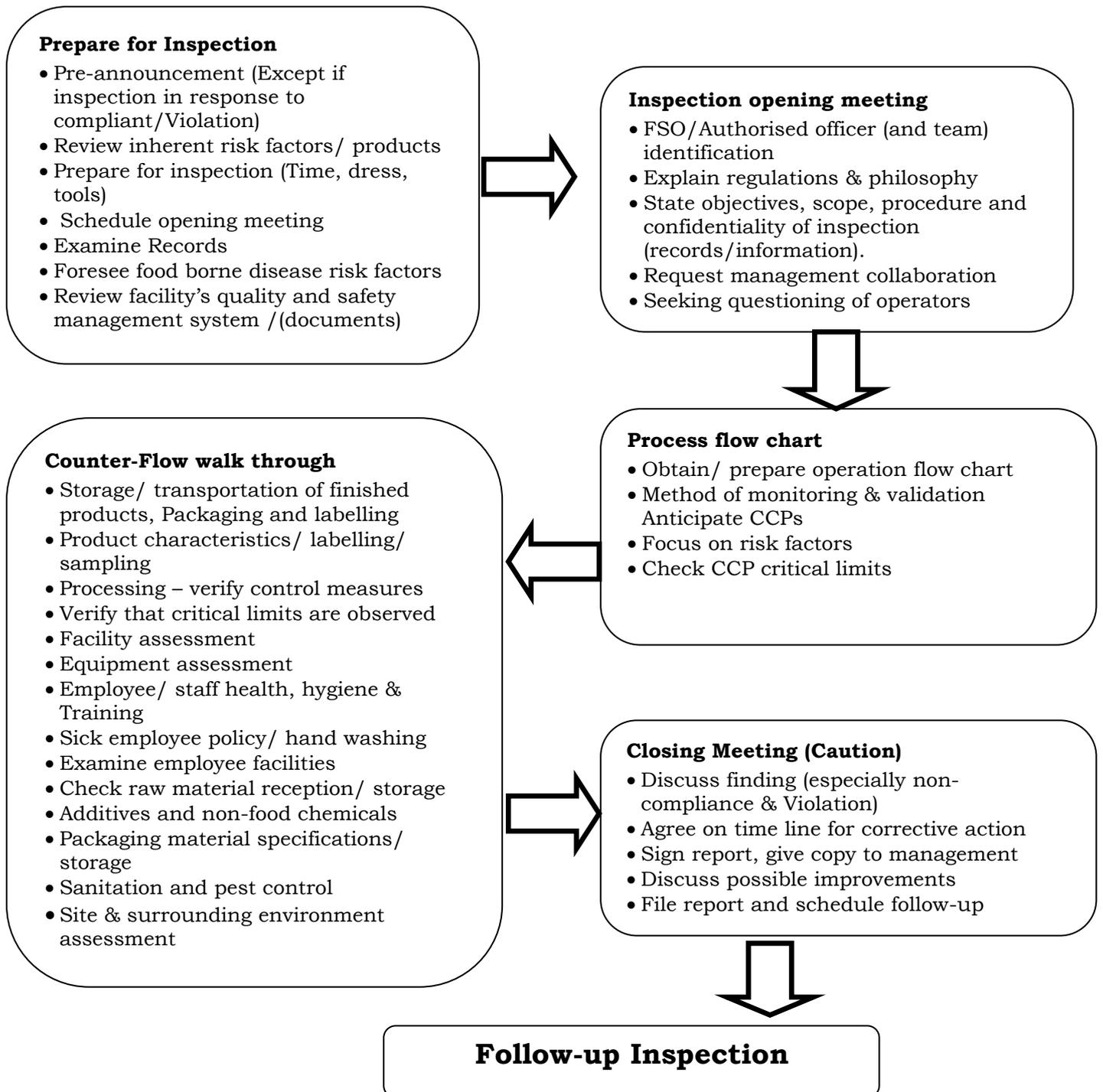
The traceability and recall programme comprises all the techniques and procedures in place at the facility to (a) maintain records of incoming materials, indicating date, lot number, supplier, carrier, amount and condition, and (b) implement a recall programme that allows products to be traced to retail in case they need to be withdrawn from the marketplace. This requires coding of all products, keeping records of lot and/or batch numbers and keeping distribution records.

8. Inspection closing, reporting and documentation

Upon completion of the inspection, the Food Safety Officer and the establishment's management should have a closing meeting to discuss any non-compliance findings (and in this case, to agree on a timetable for correction), discuss possible ways of improving the process, gather any missing information and answer the management's questions. For example, the Food Safety Officer may point out that recent urbanization of areas surrounding the establishment has brought more traffic, dust and insect pests, and that if this trend continues, it will be necessary to install air conditioning throughout the plant or, at a minimum, in the final product packaging area to replace the current natural air flow. Therefore, the management should start thinking about this improvement.

The particulars of every inspection must be recorded in an appropriate form and documented with copies of any pertinent documents the Food Safety Officer deems necessary. Management must sign the original of the form to signal having seen it and discussed its contents, and the original form must then be entered in the IT enabled system files for future reference (to be launched in near future). If corrective actions are scheduled, a copy of the inspection form should be kept separately in a "pending" file organized by month to ensure timely follow-up. Such follow-up may include an unannounced, limited inspection to ascertain that corrective actions agreed upon during the previous inspection have been implemented.

Procedural flow of inspection of food processing facility



BIOLOGICAL INSPECTION OF ESTABLISHMENTS

While conducting inspection following parameters to be taken into consideration to address microbial contamination/ microbial hazards in the food establishments.

1. Raw Material Storage – Refrigerated and Non-Refrigerated

- a) All raw materials should be –
 - free from insect and rodent infestation
 - free of contamination from other sources, e.g. birds, moisture, mould etc.
- b) If bulk floor handling and storage is in use then,
 - Hose couplings, inside and outside plant, should be adequately protected from rodents, clean and in good repair
 - Dust collectors or ventilation bags at top of the bulk tank should be clean and insect free
 - If system contains inspection ports, they should be free from contamination
- c) The microbial load of all the food items like raw fruits and vegetables, liquid milk, meat, eggs, flour, cereal grains etc. should be within the acceptable limits at receiving as well as during their storage in the raw material store.
- d) Depending on the nature of the food adequate facilities shall be available for storing refrigerated or frozen foods, monitoring food temperatures, and controlling ambient temperatures and humidity to ensure the microbiological safety and suitability of food.
- e) In case of grain storage, fumigation should be done at regular intervals to ensure the absence of any microbiological and pest activity.
- f) Swabs can be taken from crates, tanks in which the material is kept and stored, to check their microbiological suitability for the purpose.

2. Manufacturing Area

- a) All pieces of food contact equipments viz. Dough mixers, conveyors, rounders, dough dividers, racks, proofing equipments, oven, rollers, slicers, sifters, pasteurizer, homogenizer, retort, bottling unit, pulper, filtering screens, mixing vats etc. should be clean and in good repair.
- b) All the equipments and their surroundings should be free from evidence of rodent or insect activity.
- c) Temperature of proofing equipment, ovens, retort, heat exchangers and cooling area should be maintained.
- d) Equipments should be cleaned (in place, wherever possible) before use.
- e) All vapor producing cooking equipment such as retort, ovens, grills, and fryers should be equipped with ventilation and an approved automatic extinguishing system to prevent unnecessary condensation in the working area which may harbor micro-organisms.
- f) Utensils like spoons, beaters, pans, bowls, trays, spatulas etc should be sanitized after every lot manufactured.
- g) Utensils and equipment washing facilities should be clean and adequate.
- h) Working area as well as the outside premises should be free from spilled powders or liquids, trash etc which may attract or harbor pests, rodents or micro-organisms.
- i) In slaughter house, diseased animal should be condemned and it should not be allowed to move further in the process.

- j) In meat processing units, carcass from diseased animal or with any internal bruise, boils etc should be removed from the process and be disposed off accordingly.
- k) Swabs of machine, working tables, utensils, food contact surfaces should be taken at regular intervals to ensure their microbial safety for food use.
- l) Air contamination should be adjudged by checking the microbial quality of air.
- m) Antiseptic/disinfectant foot bath should be provided at the entrance of plant.

3. Packaging and Storage of Finished Product

- a) Packaging material (pouches, films, laminates, cans, glass/PET bottles, closures, jars, cardboard boxes) should be kept and stored under hygienic conditions in a room intended for that purpose.
- b) Packaging material/bottles/closures should be sanitized before use.
- c) All the products should be labeled according to the Food Labelling Act.
- d) Immediately after packaging and proper labelling, the products should be placed in the rooms provided for storage under required temperature and humidity conditions to prevent any spoilage.
- e) Temperature and relative humidity of the storage area should be maintained to optimum required level.

4. Personnel Hygiene

a) Health Status

- Personnel known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted through food, shall not be allowed to enter into any food handling area if there is a likelihood of their contaminating food. According to the type of disease, food handler work restrictions are given in Table 1.
- The Food Business shall develop system, whereby any person so affected, shall immediately report illness or symptoms of illness to the management and medical examination of a food handler shall be carried out apart from the periodic checkups, if clinically or epidemiologically indicated.
- Arrangements shall be made to get the food handlers / employees of the establishment medically examined once in a year to ensure that they are free from any infectious, contagious and other communicable diseases. A record of these examinations signed by a registered medical practitioner shall be maintained for inspection purpose.
- The factory staff shall be compulsorily inoculated against the enteric group of diseases once a year and a record towards that shall be kept for inspection.
- In case of an epidemic, all workers to be vaccinated irrespective of the yearly vaccination.

Table 1 Food Handler Work Restrictions

Disease	Work status	Duration of Work Restriction / comments
Abscess, boils, etc	Relieve from direct contact and food handling.	Until drainage stops and lesion has healed or employee has negative culture.
AIDS or ARC (AIDS related complex)	May work (per CDC guidelines). No open lesions, upper respiratory diseases, or communicable diseases.	Employee will be counseled and educated.
Diarrhea		
1) Acute stage (etiology known)	Relieve from direct food handling.	Until symptoms resolve and infection with <i>Salmonella</i> , <i>Shigella</i> or <i>Campylobacter</i> is ruled out.
2) Campylobacter	Relieve from direct food handling.	Until symptoms resolve or after appropriate antibiotic therapy for 48 hours.
3) Salmonella	Relieve from direct food handling.	Until stool is free of the infecting organism in two consecutive cultures, not less than 24 hours apart.
4) Shigella	Relieve from direct food handling.	Until stool is free of the infecting organism in two consecutive cultures, not less than 24 hours apart.
5) Hepatitis A	Relieve from direct food handling.	Until seven days after onset of jaundice. Must bring note from physician upon return.
6) Staphylococcus aureus	Relieve from direct food handling.	Until lesions have resolved and the employee has negative culture.

b) Personal Cleanliness

- Food handlers shall maintain a high degree of personal cleanliness. The food business shall provide to all food handlers with adequate and suitable clean protective clothing, head covering, face mask, gloves and footwear and the food business shall ensure that the food handlers at work wear only clean protective clothes, head covering and footwear every day.
- Food handlers, with any cut or wounds in their person, shall not come in direct contact with food or food contact surfaces.
- Food handlers shall always wash their hands with soap and clean potable water, disinfect their hands and then dry with hand drier or clean cloth towel or disposable paper at the beginning of food handling activities; immediately after using the toilet; and after handling raw food or any contaminated material, tools, equipment or work surface, where this could result in contamination of other food items.
- Food handlers engaged in food handling activities shall refrain themselves from smoking; spitting; chewing or eating; sneezing or coughing over any food whether protected or unprotected food and eating in food preparation and food service areas.

- The food handlers should trim their nails periodically, do not encourage or practice unhygienic means while handling food.
- Persons working directly with and handling raw materials or food products shall maintain high standards of personal cleanliness at all times. In particular:
 - They shall not smoke, spit, eat or drink in areas or rooms where raw materials and food products are handled or stored;
 - wash their hands at least each time work is resumed and whenever contamination of their hands has occurred; e.g. after coughing / sneezing, visiting toilet, using telephone, smoking etc.
 - avoid certain hand habits - e.g. scratching nose, running finger through hair, rubbing eyes, ears and mouth, scratching beard, scratching parts of bodies etc.- that are potentially hazardous when associated with handling food products, and might lead to food contamination through the transfer of bacteria from the employee to product during its preparation. When unavoidable, hands should be effectively washed before resuming work after such actions.

In addition to Food Safety & Standards Rules and Regulations, the inspector must know other pertinent regulations such as those dealing with environmental issues and workplace safety, voluntary standards, grading and marking rules of the products etc.. Also of importance to product quality and safety are regulations affecting agricultural practices, food transportation and food distribution, packaging rules, Export regulations, Consumer protection act etc.

Bureau of Indian Standards (BIS):

The activities of Bureau of Indian Standards (BIS) are two fold. The formation of Indian Standards in the processed food sector and the implementation of standards through promotion, voluntary and third party certification systems. BIS has on record standards for most processed foods. In general these standards cover raw materials and their quality parameters, hygienic conditions under which products are manufactured and packaging and labeling requirements. Manufacturers complying with standards laid down by the BIS can obtain the ISI Mark that can be exhibited on product packages. These standards have higher quality specifications than those prescribed under AGMARK and PFA. Bureau of Indian Standards has also identified certain items like food colours, food additives, vanaspathi, milk powder, and condensed milk for compulsory certification. BIS has also provided a document of guidelines entitled "Food hygiene - Hazard Analysis Critical Control Point" (HACCP) - System and guidelines for its application [IS 15000:1998]. The BIS has laid down specification for mineral water and packaged drinking water and is the licensing authority for the manufacture of mineral water and packaged drinking water in India.

As a member of WTO, India is Signatory to the Sanitary and Phytosanitary (SPS) agreement and hence has to adopt for International trade, the standards and guidelines and recommendations issued by Food Hygiene Committee of the Joint FAO / WHO Codex Alimentarius Commission which advocates the adoption of HACCP. Industries in the countries exporting to WTO member nations would now have to adopt HACCP, from dates specified by each importing country. For food industry in India, adoption of HACCP is becoming imperative to reach global standards, demonstrate compliance to regulations/ customer requirements besides providing safer food at all time.

IS Standards have been laid down for fruit and vegetable products, spices and condiments, animal products and processed foods. The products are checked for quality by the BIS in their own network of testing laboratories or in several public and private laboratories recognized by them. Under BIS many of the standards are laid down based upon ISO (International Organization for Standardization) standards which is a worldwide federation of National Standard Bodies. The important analytical parameters which influence the quality of food products.

Directorate of Marketing and Inspection (DMI) / AGMARK Standards:

The DMI under the Department of Agriculture and Co-operation in the Ministry of Agriculture enforces the Agricultural Products (Grading and Marketing) Act 1937. Under this Act Grade standards are prescribed for agricultural and allied commodities. Agmark grading means grading of an article in accordance with grade/standards prescribed under the provisions of the act. These are known as AGMARK standards. Grading under the provision of this Act is voluntary. Any person or body of persons desirous of being authorized to grade and mark an article under the provisions of the act shall apply to the agricultural marketing advisor or any other officer of the Central Government or State

Government authorized by Agricultural Marketing Advisor. Manufacturers who comply with standard laid down by DMI are allowed to use "AGMARK" labels on their products

The general grading and marketing rules 1988 are given in Appendix II of this Act. The grading of all decentralized commodities are given in Appendix III for domestic trade. The grade designation marks shall be applied only to the articles mentioned in the certificate of authorization during the validity period. The certificate of authorization is issued by agricultural marketing advisor or any other officer of the central or state government authorized by the Agricultural Marketing Advisor. The grade designation characteristics vary from product to product. The inspecting officer shall analyze the sample for quality factors as laid down in grading and marketing rules of the specific commodity in respect of produce. The inspecting officer shall also ensure that all the food article graded and certified under Agmark shall satisfy the mandatory requirements laid down under PFA rules. The rules for affixation of AGMARK labels, method of packing and marking, check sampling and certificate of grading rules are also given under this act.

Essential Commodities Act 1954:

A number of control Orders have been formulated under the provisions of Essential Commodities Act 1954, whose main objectives are to regulate manufacture, commerce and distribution of the essential commodities including food. These Orders include the Fruit Products Order 1955, Solvent Extracted Oil, De-oiled meal and Edible flour control Order 1967 and Vegetable Products Control Order 1967, Meat Products Order 1973 and Cold Storage Order 1980 all the above orders except Cold Storage Order have now been consolidated under the Food safety and standards Act, 2006 and rules and regulations made thereunder.

Cold Storage Order 1980:

The Cold Storage Order 1980 promulgated under the Essential Commodities Act, 1955, has the objective of ensuring hygienic and proper refrigeration conditions in a cold store, regulating the growth of cold storage industry and rendering technical guidance for the scientific preservation of food stuffs. The order includes 26 subsections. The food stuffs covered are i) Fruits whether fresh, dried, dehydrated or preserved ii) Vegetables including seed potatoes whether fresh, dried, dehydrated iii) Meat whether fresh, frozen, dried or preserved iv) Fish, whether fresh, frozen or dried v) Eggs whether shelled and unshelled vi) Milk and milk products vii) Spices and Condiments viii) Any other food or food products which Central Government may notify in the order, specify from time to time. The important provisions include "factors to be considered in granting or refusing permission for construction of proposed cold storage, prohibition of operation of a cold storage or expanded cold storage without license and maintenance of record and submission of returns.

Standards on Weights and Measures Act 1976 and standards of weights and measures (Packaged commodities) Rules 1977:

These Rules lay down certain obligatory conditions for all commodities that are in packed form with respect to declarations on gross / net weights, which are intended to be sold, distributed, delivered, offered or displayed for sale. These Rules are operated by the Directorate of Weights and Measures under the Ministry of Food and Civil Supplies.

The standards of weights and measures act 1956 was first enacted in 1956 and later amended in 1976. Uniform standards and weights measures were established based on metric system. This act was based on international system of units as recognized by the General Conference of Weights and Measures (CGPM) and the International organization of legal metrology (OIML). Later this act was modified by the parliament as Standard Weights

and Measures Act 1976. This act has 84 subsections. Under the provisions of the act standards of weights and measures were established. Every unit of weight or measure shall be based on the units of metric system. The unit of length shall be meter, the unit of mass shall be Kilogram and the unit of time shall be second. The base unit of electric current shall be ampere, unit of thermodynamic temperature shall be Kelvin, unit of luminous intensity shall be Candela, Unit of amount of substance shall be mole, the base unit of numeration is the unit of the International form of Indian Numerals.

The commodities in packed form extended to be sold are distributed in the course of inter state trade or commerce, the quantities and origin of such commodities to be declared. The verification of stamping of weights and measures sent from one state to another are to be done. Import and export rules for the weights and measures to have control of the quality of the product and included under the provisions of this Act.

The standards weights and measures packaged commodities Rules 1977 include 40 Rules. The rules include pre-packing and sale of commodities in packaged form. Specific commodities to be packed and sold only in standard packages. Declaration to be made on every package.

Export [Quality Control and Inspection] Act 1963

The Export Inspection Council is responsible for operation of Export [Quality Control and Inspection] Act 1963. Under this Act a large number of exportable commodities have been notified for compulsory pre-shipment inspection. The quality control and inspection of various export products is administered through five regional Export Inspection Agencies and a network of more than fifty offices located around the important production centres and ports of shipment, which work under the administrative and technical control or Export Inspection Council.

In addition, organisations may be recognised as agencies for inspection and / or quality control. Recently, the Government has exempted agriculture and food products, fruit products and fish and fishery products from compulsory pre-shipment inspections, provided that the exporter has a firm letter from the overseas buyer stating that the overseas buyer does not require pre-shipment inspection from official Indian inspection agencies.

Consumer Protection Act 1986:

Government of India has accorded a very high priority to the consumer protection programme. Ministry of food and Consumer Affairs, Department of Consumer Affairs has been designated as the Nodal Department to deal with the area of consumer protection. Since 1986, the department is taking a number of measures to promote a strong and broad based consumer movement in the country. The main objective of this Act is to provide better protection for the consumer in terms of quality of the product he buys. Unlike the existing laws which are preventive in nature, the provisions of this Act are compensatory in nature. This Act is intended to provide simple, speedy and inexpensive redressal to the consumer's grievance and relief of specific nature. The act has been amended in 1993 both to extend its coverage and scope and to enhance the powers of redressal machinery.

The salient features of the Act are summed up as under:-

This Act applies to all goods and services unless specifically exempted by the Central government.

It covers all the sectors whether private, public or co-operative. The provisions of the Act are compensatory in nature.

The Act enshrines the following rights of consumers:-

- Right to be informed about the quality, quantity, potency, purity, standard and price of goods or services so as to protect the consumers against unfair trade practices.
- Right to be assured, wherever possible, access to a variety of goods and services at competitive prices.
- Right to be heard to be assured that consumer's interests will receive due consideration at appropriate forums.
- Right to seek redressal against unfair trade practices and unscrupulous exploitation of consumers.
- Right to consumer education.

Under the Consumer Protection Act there are several definitions laid down. The important being --

- a) "Defect" - means any fault, imperfection or shortcoming in the quality, quantity, potency which is required to be maintained by or under any standards.
- b) "Unfair trade practices" - means a trade practice which for the purpose of promoting sale, use or supply of any goods or for the provision of any service adopts any unfair method or unfair practice including any of the following practices, namely (i) bargain price (ii) offering of gifts, prize, contest etc. (iii) non-compliance of product safety standard (v) hoarding or destruction of goods.
- c) "Service" -- means service of any description which is made available to potential users and include the provision of facilities in connection with banking, financing, insurance, transport, processing, entertainment, house construction etc.

Commodity Boards:

Commodity Boards such as Spices Board, Tea Board, Coffee Board, National Dairy Development Board and other organisations like APEDA, MPEDA also provide safety measures for export oriented food items so as to avoid rejections and detention of consignments not conforming to quality standards.

FRUIT AND VEGETABLE PROCESSING UNIT.

Sanitary and hygienic Requirements of a F & VP Units to be verified by the Inspecting official:

1. The machinery installed in the processing hall should not occupy more than 50% of total space so as to permit hygienic production and easy movement of workers and materials. All machinery should be installed in such a manner which may allow continuous flow of production and the design which will permit easy cleaning
2. The tops of tables used for food preparation shall be made of impervious material, preferably SS top.
3. The equipment and the factory shall not be used for manufacture of repugnant products like fish, meat, eggs etc. However, permission may be granted as a special case if arrangements are made for disinfection of premises after changing from meat products to fruit products (one-month idle gap will be required for changeover.)
4. Adequate arrangements for cleaning equipments, machinery, containers tables and raw materials shall be provided.
5. Copper, brass or iron equipments, containers or vessels are not permitted, in the preparation, packing or storage of fruit products, only aluminum, stainless steel, glass or tin equipment are allowed.
6. The water used shall be potable and shall be got examined chemically and bacteriological by a Public Health Laboratory. The water sample should be drawn for such examination by the public Health Authority of the Area where the promises is located or should be drawn in the presence of the above authority. Free flowing tap water of 1 Kilo Liter per day shall be made available.
7. Wherever cooking is done on open fire, proper outlets for so smoke/steam etc. like chimney, exhaust fan etc. shall be provided. All extraction fans installed on the premises shall discharge into the open air at a height of at least 2.5m above ground in such a manner as not to be a nuisance.
8. The workers shall be provided with clean aprons; head- wears gloves etc. and shall be personally neat and tidy.
9. Medical examination of the workers, in respect to their fitness, and they are not suffering from contagious and loathsome diseases, and suitable to work in the food factory.

BAKERY PRODUCTS AND CONSUMER FOOD PRODUCTS

1. Raw Material Storage – Refrigerated and Non-Refrigerated

- g) All raw materials should be –
 - stored off the floor and away from walls
 - free from insect and rodent infestation or adulteration
 - free of contamination from other sources, e.g. birds, moisture, mould etc.
- h) Refrigerated items like chocolate, eggs should be stored at proper temperatures.
- i) If bulk floor handling and storage is in use then,
 - Hose couplings, inside and outside plant, should be adequately protected from rodents, clean and in good repair
 - Dust collectors or ventilation bags at top of the bulk tank should be clean and insect free
 - If system contains inspection ports, they should be free from contamination
 - Tailings from sifting operations should be free from contamination.
- j) FIFO (First In First Out) system should be applied to release the raw material from the store
- k) Expired material should be discarded and not enter into the manufacturing process.
- l) Food colours and additives should be used within the safe limits prescribed in FSS Act 2006.

2. Manufacturing Area

- n) All pieces of food contact equipments viz. Dough mixers, conveyors, rounders, dough dividers, racks, proofing equipments, oven, rollers, slicers, sifters etc. should be clean and in good repair.
- o) All the equipments and their surroundings should be free from dirt, dust and evidence of rodent or insect activity
- p) Inspection cleaning ports on flour conveyor systems should be accessible and easy to open.
- q) Conveyor systems should be free from evidence of insect activity
- r) Cloth connecting sleeves should be clean, tightly-fitted and insect free
- s) Tailing box on sifter should be free from evidence of insect activity
- t) Proofing equipment should be free from evidence of insects or rodents
- u) Temperature of proofing equipment, ovens and cooling area should be maintained
- v) Baking pans or storage bins should be clean
- w) Equipments should be cleaned before use
- x) All grease vapour producing cooking equipment such as doughnut machines, grills, and fryers should be equipped with ventilation and an approved automatic extinguishing system.
- y) Utensils like spoons, beaters, pans, bowls, trays, spatulas etc should be clean and free from adulterants
- z) Utensils and equipment washing facilities should be clean and adequate
- aa) Cleaning agents and compounds should be labelled properly and kept separate from food items
- bb) Weighing practices should be adequate to ensure the declared quantity of contents would be achieved.
- cc) All high temperature equipment should be equipped with high-temp cut-off devices which cut off the fuel or power source if the upper safe limit is exceeded.
- dd) Working area as well as the outside premises should be free from spilled powders or liquids, trash etc which may attract or harbour pests, rodents or micro-organisms.

3. Packaging and Storage of Finished Product

- f) Only food grade packaging material (printed/unprinted) should be used for wrapping and packaging of food items.
- g) Packaging material should also be kept and stored under hygienic conditions in a room intended for that purpose.
- h) All the products should be labelled according to the Food Labelling Act.
- i) Immediately after packaging and proper labelling, the products should be placed in the rooms provided for storage under required temperature and humidity conditions.
- j) Temperature and relative humidity of the storage area should be maintained to optimum required level.
- k) FIFO system should be applied for dispatch of all products.
- l) Food colours and additives should be used within the safe limits prescribed in FSS Act 2006.

MILK AND MILK PRODUCTS PROCESSING UNITS

The dairy establishment in which dairy based food is being handled, processed, manufactured, stored, distributed and ultimately sold by the food business operator, and the persons handling them should conform to the sanitary and hygienic requirement, food safety measures and other standard as specified below.

I. SANITARY REQUIREMENTS

1. Dairy Establishments shall have the following:
 - a) Facilities for the hygienic handling and protection of raw materials and of non-packed or non-wrapped dairy products during loading and unloading, transport & storing including Bulk Milk cooling facilities;
 - b) Appropriate arrangements for protection against pests are must;
 - c) Instruments and working equipment intended to come into direct contact with raw materials and dairy products which are made of corrosion-resistant material and which are easy to clean and disinfect;
 - d) Appropriate facilities for the cleaning and disinfecting of equipment and instruments especially cleaning in place (CIP) system;
 - e) An adequate waste water disposal system which is hygienic and approved by Pollution Control Board;
 - f) A lockable room or a secure place for the storage of detergents, disinfectants and other similar substances;
 - g) Adequate facilities for cleaning & disinfecting of tanks used for transporting dairy products and raw milk. These containers have to be cleaned after every use.
2. Dairy establishments shall have working areas of sufficient size for work to be carried out under adequate hygienic conditions; their design and layout shall be such as to preclude contamination of the raw materials and the dairy products.
3. In areas where raw materials are handled and dairy products are manufactured, the areas shall have the following:
 - a) Solid, waterproof flooring which is easy to clean and disinfect and which allows water to drain away, and equipment to remove water;
 - b) Walls which have smooth surfaces and are easy to clean, are durable and impermeable and which are covered with light-coloured oil/emulsion paint;
 - c) Ceilings or roof linings shall be easy to clean in those areas where exposed or nonpackaged raw materials or dairy products are handled;
 - d) doors made of non-corrossive materials which are easy to clean;
 - e) adequate ventilation wherever necessary, good steam and water-vapour exhaust facilities in accordance with Factory Act, 1948;
 - f) adequate natural or artificial lighting in accordance with Factory Act, 1948;
 - g) an adequate number of facilities with hot and cold running water, or water pre-mixed to a suitable temperature, for cleaning and disinfecting hands; taps in work rooms and lavatories for cleaning and disinfecting hands which shall be non hand-

- operable (e.g. foot operated, sensor operated etc.), these facilities shall be provided with cleaning and disinfecting materials and a hygienic means of drying hands; and
- h) Facilities for cleaning tools, equipment and installations.
4. The occupier of a dairy establishment shall take appropriate measures to avoid cross contamination of dairy products in accordance with the cleaning program specified earlier.
 5. Where a dairy establishment produces food stuffs containing dairy products together with other ingredients, which have not undergone heat treatment or any other treatment having equivalent effect, such dairy products and ingredients, shall be stored separately to prevent cross-contamination.
 6. The production of heat-treated milk or the manufacture of milk-based products, which might pose a risk of contamination to other dairy products, shall be carried out in a clearly separated working area.
 7. Instruments and equipment used for working on raw materials and dairy products, floors, ceilings or roof linings, walls and partitions shall be kept in a satisfactory state of cleanliness and repair, so that they do not constitute a source of contamination to raw materials or dairy products.
 8. Equipment, containers and installations which come into contact with dairy products or perishable raw materials used during production shall be cleaned and if necessary disinfected according to a verified and documented cleaning programme.
 9. Equipment, containers, instruments and installations which come into contact with microbiologically stable dairy products and the rooms in which they are stored shall be cleaned and disinfected according to a verified and documented Food Safety management system programme drawn up by the occupier of the dairy establishment.
 10. The processing establishment shall in principle be cleaned according to an established, verified and documented Food safety management programme. The manufacturer / shall take appropriate measures to avoid any kind of cross contamination.
 11. Disinfectants and similar substances used shall be used in such a way that they do not have any adverse effects on the machinery, equipment, raw materials and dairy products kept at the dairy establishment. They shall be in clearly identifiable containers bearing labels with instructions for their use and their use shall be followed by thorough rinsing of such instruments and working equipment with potable water, unless supplier's instructions indicate otherwise.
 12. Any container or tank used for transporting or storage of raw milk shall be cleaned and disinfected before re-use.

II. REQUIREMENTS FOR STORAGE

1. Immediately after procuring, raw milk shall be placed in a clean place, which is suitably equipped so as to prevent any kind of contamination.
2. Where raw milk is collected daily from a producer, it shall, if not collected and brought to the dairy plant within four hours of milking, be cooled as soon as practicable after procuring to a temperature of 4°C and maintained at that temperature until processed;

3. Upon acceptance at a processing establishment milk shall, unless heat-treated *immediately*, be cooled to a temperature of 4°C or lower, if not already at such temperature, and maintained at that temperature until heat-treated.
4. When the pasteurization process is completed, pasteurized milk shall be cooled immediately to a temperature of 4°C or lower.
5. Subject to Paragraph 7 below, any dairy product not intended to be stored at ambient temperature shall be cooled as quickly as possible to the temperature established by the manufacturer of that product as suitable to ensure its durability and thereafter stored at that temperature.
6. Where dairy products other than raw milk are stored under cooled conditions, their storage temperatures shall be registered and the cooling rate shall be such that the centre of products reach the required temperature as quickly as possible.
7. The maximum temperature at which pasteurized milk may be stored until it leaves the treatment establishment shall not exceed 5°C.
8. Dairy products not intended to be stored at ambient temperature shall be cooled as quickly as possible to the temperature established by the manufacturer of that product as suitable to ensure its durability and shelf life.
9. Where dairy products other than raw milk are stored under cool conditions, their storage temperatures shall be recorded and the cooling rate shall be adjusted in such a way that the products reach the required temperature at the earliest.

III. REQUIREMENTS FOR WRAPPING AND PACKAGING

1. The wrapping packaging of dairy products shall take place under satisfactory hygienic conditions and in rooms provided for that purpose.
2. The manufacture of dairy products and packaging operations may take place in the same room if the following conditions are satisfied: -
 - a) the room shall be sufficiently large and equipped to ensure the hygiene of the operations;
 - b) the wrapping and packaging shall have been brought to the treatment or processing establishment in protective cover in which they were placed immediately after manufacture, which protects the wrapping or packaging from any damage during transport to the dairy establishment, and they shall have been stored under hygienic conditions in a room intended for that purpose;
 - c) The rooms for storing the packaging material shall be free from vermin and from dust which could constitute an unacceptable risk of contamination of the product and shall be separated from rooms containing substances which might contaminate the products. Packaging shall not be placed directly on the floor;
 - d) packaging shall be assembled under hygienic conditions before being brought into the room, except in the case of automatic assembly or packaging, provided that there is no risk of contamination of the products;
 - e) Packaging shall be done without delay. It shall be handled by separate group of staff having experience in handling and product wrapping and

- f) Immediately after packaging, the dairy products shall be placed in the designated rooms provided for storage under required temperature.
3. Bottling or filling of containers with heat-treated milk and milk product shall be carried out hygienically.
4. Wrapping or packaging may not be re-used for dairy products, except where the containers are of a type which may be re-used after thorough cleaning and disinfecting.
5. Sealing shall be carried out in the establishment in which the last heat-treatment of drinking milk or liquid milk-base products has been carried out, immediately after filling, by means of a sealing device which ensures that the milk is protected from any adverse effects of external means on its characteristic. The sealing device shall be so designed that once the container has been opened, the evidence of opening remains clear and easy to check.

Milk products

Butter

Butter is a fatty product exclusively derived from milk. Sodium chloride, cultures of harmless lactic-acid-producing bacteria and some food additives (e.g., vegetable colours) are permitted. The proportion of milk fat in butter is normally specified in national legislation, and records should be checked to ensure that water is not being substituted for butter-fat.

Butter is generally stored at low temperatures, but some organisms, such as the mycobacteria *Brucella* and *Staphylococci*, can survive in it for a long time.

Clarified butter (ghee). Clarified butter or butter oil, which may be called ghee, is a costly product used as a cooking medium in many countries. It is pure clarified fat derived solely from milk, curd, cooking butter or cream to which no colouring matter or preservative has been added; this is melted by heat and the clear supernatant poured off. Clarified butter should be free from animal fat, whey, vegetable oils and fats, and mineral oils. It keeps well without refrigeration even in warm weather. Samples should be collected for laboratory examination for freedom from admixture with cheaper oils or fats. On rare occasions, motor-oil or mineral grease has been mixed with *ghee*, resulting in serious poisoning among consumers.

The inspector should check the plant's quality control procedures if any, and look for the presence of potential adulterants in the premises. He should check sanitation and the hygienic practices of employees in the plant.

Ghee substitutes. These are normally made from refined edible vegetable oils and their hydrogenated products, and may contain certain antioxidants and flavouring agents. Regulations in the countries where ghee substitutes are most widely used generally require the presence of not more than 5 percent of sesame oil, giving a standardized colour in the Baudouin reaction and a prescribed amount of Vitamin A.

Cream

The main problem is filth and decomposition in the cream itself; however, general plant sanitation is also important. The inspector should examine the surface of the cream in the container visually for filth and insects. For more detailed examination, it may be desirable to filter an entire container of cream through a paper or cloth filter. The filter should then be washed with hot water to remove the cream residue, and the material trapped on the filter examined for flies, maggots or other insects, and rodent excreta. The inspector should watch for milkstone build-up on equipment. This can be identified with an ultraviolet light; its presence indicates poor cleansing procedures.

Cheese

Generally, cheese is the fresh or matured product obtained by the draining after coagulation of milk, skim or partly skim milk, buttermilk, or a combination of some or all of these products. Wax or other material used for covering the outer surface must not contain material harmful to health. Processed cheese is made by grinding, mixing, melting and emulsifying one or more varieties of cheese with the aid of heat and emulsifying agents, with or without the addition of permitted food additives. Plant sanitation is of major importance. The inspector should check the adequacy of milk pasteurization operations. Containers of milk may be filtered through a paper or cloth filter to allow examination of the residue for filth and insects. Since many hand operations are used in the manufacture of cheese, employee's hygienic practices and health conditions must be checked to reduce the possibility of bacterial contamination.

Evaporated and condensed milk

Overall plant sanitation must be satisfactorily maintained to reduce the possibility of bacterial contamination of all these products. Several of these products can be defined as follows:

- (a) evaporated milk is a liquid product, obtained by the partial removal of water from milk, usually under reduced pressure. It is sealed in cans and sterilized by heating at 115°C for 15 to 20 minutes;
- (b) evaporated skim milk is a liquid product, obtained by the partial removal of water from skim milk, usually under reduced pressure. It is sealed in cans and sterilized by heating at 115°C for 15 to 20 minutes;
- (c) khoa is also a form of evaporated milk, prepared traditionally by open-pan evaporation of milk to an almost semi-solid state. It has a much lower moisture content than evaporated milk and is used in many countries as a basic ingredient in the manufacture of confectionery and sweets. The centers of the lumps of khoa may have higher moisture content, creating the danger of growth of pathogens and enterotoxin from *Staphylococci*. Spot checks should be made by laboratory examination for pathogens and toxins;
- (d) Skimmed sweetened condensed milk is a product obtained by evaporating part of the water from whole or fully or partially skimmed milk, with or without the addition of sugar.

Dried milk (milk powder), reconstituted milk and toned milk

Milk powder is a product obtained by the removal of water from milk, partly skim milk or skim milk. Dried milk is a good and important source of protein. It is used not only in reconstituted milk but also as an ingredient in many other products.

Milk can be dried either by the roller- or the spray-drying process. As roller-drying involves heating the milk to higher temperatures than spray-drying, roller-dried milk is considered to be hygienically better protected. If milk received for drying cannot be processed immediately, it should be cooled to 3 to 4°C, since certain *Staphylococci* may produce dangerous amounts of heat-stable toxin in poorly cooled milk that is awaiting drying. At some stage before drying, milk must receive heat treatment that is at least equivalent to pasteurization, preferably at a temperature of about 85°C at every stage, care must be taken to avoid holding whole or concentrated milk awaiting drying at temperatures that would permit the extensive growth of toxin-producing *Staphylococci*. Particular attention should be paid to the balance or holding tank between the evaporator and the drier. In addition, the inspector should be alert for the existence of moisture (2-3 percent) and temperature conditions conducive to the growth and contamination by *Salmonellae*.

Special care is also necessary in the storing, handling and distribution of both dried and reconstituted milk. Since the natural bacteria-inhibiting capacities of raw milk are destroyed in the drying process, every precaution must be taken to avoid contamination with pathogens. Water used in reconstitution is of special importance. It should be bacteriologically safe or should be brought to the boil and subsequently cooled to 50°C before use. Where dried milk is reconstituted or used in the manufacture of toned milk, the resultant product should be properly pasteurized and should be protected against recontamination in the same way as pasteurized milk.

Overall plant sanitation is extremely important. The plant should be visited before production operations start, so that the inspector can evaluate the firm's clean-up and start-up procedures and observe the personal sanitation and hygienic practices of employees.

He should check pasteurization operations, and determine whether clean, filtered air is used in driers, conveyors, and post-drier areas, with no possibility of adding contaminants. He should also check the plant's quality-control procedures and take laboratory samples to determine conformity with national standards.

Candy and Sweets processing units

The main problems relate to house keeping, infestation and general hygienic practices involved with both production and storage. Starch is often used to form candy shapes. Other raw materials, such as sugar, nuts, flour, milk products, etc., should also be checked for cleanliness and quality. The inspector should check the firm's sifting operations for evidence of insects, foreign material, etc.

In warm climates, candy and sweets are particularly attractive to flies, bees and other insects. The inspector should check whether they are properly protected during storage and sale. Milk sweets being perishable, he should check the storage conditions and freshness of the product. He should check whether reworked candy is added back to the production line and how it is handled, and determine the dressing or release agent used on candy-cooling slabs. He should ensure that only food grade colours are used and calculate colour level in the final product.

Chocolate and Cocoa processing

Salmonella contamination and other enteric infections can be a problem with chocolate products. The inspector should determine whether critical raw materials such as skim milk powder, milk, eggs, cocoa, etc. have been adequately heat-treated, pasteurized, or handled in such a way that bacterial contamination is eliminated or minimized. Sanitation is a major problem, especially since many chocolate products are finished by hand-dipping; employee sanitation practices are, therefore, very important to prevent product contamination. These products are generally consumed by children, who are highly susceptible to enteric infections. Storage of cocoa beans, nuts and coconuts should be checked for insects, rodents, and mycotoxins. The inspector should determine how fumigants are used. Insect infestation in processing machinery can be a problem if equipment is not cleaned regularly. Samples collected for analysis of mycotoxins, unless otherwise directed, should consist of 30 individual portions of at least 125 g each.

Coffee and Tea processing

Insect infestation and rodent contamination in storage are the most important problems. Inspectors should be alert to adulteration of coffee with chicory, tamarind seed flour and other coffee substitutes. Tea may be adulterated with exhausted tea leaves, sawdust and artificial colouring.

Custard and Cream-Filled Foods

Sanitation and good-quality raw materials are critical factors to be kept in mind when inspecting these products. Bacteria-sensitive materials, such as skim milk powder, milk and eggs, must have minimum bacteria levels, and must be stored, defrosted and handled in such a way that the addition or growth of bacteria is prevented. The products are not subjected to a heat treatment after filling; the filling operations must, therefore, be conducted in the most sanitary manner possible. The inspector will need to check equipment sanitation, clean-up procedures and employee practices.

Fats and Oils processing units

The inspector should check the raw materials for adulteration (e.g., argemone in rapeseed or mustard); for contamination with filth, insects, chemicals, or contaminants from unsatisfactory raw materials, or from improper manufacturing operations; and for the substitution by low-cost oils of those of higher value. Inspection for adulteration requires careful observation because the processors involved are normally carrying out such practices willfully, to gain illegal profits. The inspector should determine the source of various oils and other ingredients on the premises, check for the unauthorized use of food additives, verify labelling, and collect samples for laboratory examination whenever adulteration is suspected.

If the oil is extracted by solvent extraction, the type and specifications of the solvent should be ascertained as well as the level of residual solvent carried over into the finished product. While many countries have taken steps to prohibit the use of PCBs, a great deal of old electrical equipment is still in use throughout the world.

Processing

- a) The premises in which the product is being handles/manufactured shall conform to the sanitary requirements as specified in the Edible Oils Packaging (Regulation) Order 1998.*(under review)*
- b) Food additive quality should comply with corresponding standards and relevant mentioned in FSS Rules and Regulation, 2009.
- c) The varieties and amount in the application of food additives should comply with FSS Rules and Regulation, 2009.
- d) Possible contamination with chemicals should also be investigated. For example, a number of serious chemical poisonings have taken place when polychlorinated biphenyl (PCB) compounds inadvertently contaminated edible oils. PCBs have been extensively used in electrical transformers and capacitors. The proximity of this type of electrical equipment to an edible oil processing operation should be investigated. While many countries have taken steps to prohibit the use of PCBs, a great deal of old electrical equipment is still in use throughout the world.
- e) Physical and chemical indices of all edible oils including vegetable oils should comply with FSS Rules and Regulation, 2009.
- f) If fortification of oil with vitamins (A, D, E and/or K) is carried out, the original compound used for fortification and form of vitamin added should also be checked.
- g) The amount of vitamin compound added and the final concentration of vitamin in the oil should be checked at regular intervals.

Packaging and Labeling

- h) Product should be packaged with compliance to The Edible Oils Packaging (Regulation) Order 1998.
- i) Products should be packaged with materials or containers that comply with hygienic requirements. The container should be clean, dry and sealed.

- j) Edible oils shall be packed in conformity with the Standards of Weights and Measures (Packaged Commodities) Rules, 1977, and the FSS Act, 2006 and Rules made there under.
- k) The labeling of packaging for sale should comply with corresponding standards and stipulations.

Storage and Transportation

- l) Edible vegetable oil should not be stored with other non-edible vegetable oil, and the storage should be equipped with measures against rain, sun exposure, contamination, and explosion.
- m) The inner-layer and valve of oil container should not be made from bronze material.
- n) Larger containers should be filled with nitrogen or carbon dioxide if possible, and must not be blended with air.
- o) Containers designated for storage of processed oil must be explicitly labeled, regularly cleaned or treated, and dried before refilling with oil.
- p) The product should be protected against contamination during transportation, and must not be transported with other toxic or hazardous goods.

Tomatoes and Tomato Products processing

Raw materials:

The inspector should check fresh tomatoes for soundness, ripeness, fungal rot (anthracnose), bacterial rot (sour), fly eggs and maggots, after sorting and before they are pulped for processing or packaged as whole tomatoes. Seasonal variations may lead to the undesirable use of unripe tomatoes. Tomato products are normally high-acid products, and as such they are thermally processed only to kill vegetative bacteria and not bacterial spores. Continual checks should be made to ensure that the finished product pH is at 4.6 or below. The inspector should check for the adulteration of tomato sauce with starch, colouring, chemicals, etc.

When whole tomatoes are peeled using a caustic solution, no caustic residue must be allowed to remain on the tomatoes to be packaged, because the pH could be altered or changed to above 4.6.

Bottled Water manufacturing units.

The water being bottled should be from an approved source and regularly tested chemically and microbiologically for conformity to prescribed standards. The inspector should check any treatment of the water by distillation, ion exchange, filtration, uv treatment, reverse osmosis, carbonation, mineral addition, or other treatment or purification steps. Samples for laboratory analysis should consist of at least 18 retail units with the same code number. This should be sufficient for both chemical and bacteriological assay.

Frozen-Food Establishments

Freezing for food preservation utilized low temperatures to prevent the multiplication of micro-organisms. For this reason, the quality of the raw materials and sanitary condition of the equipment are critical. The material should be handled and prepared as quickly as possible under the best sanitary conditions to minimize the number of bacteria present at the time of freezing. Frozen conditions must be adequately maintained during transportation of the frozen foods. Raw materials should be subjected to a field examination. At the time of delivery, the inspector should check 100 pieces of the particular fruit, vegetable or other food arriving at the plant for preparation before freezing. He should separate those pieces which are unsatisfactory because of mould, decomposition, insect and rodent filth or foreign material, and report the unsatisfactory pieces as a percentage of the sample taken. He should examine 100 pieces after all sorting and grading have been completed, to determine the amount of unsatisfactory material being removed or being allowed to enter the process. This procedure can then be repeated at other times during the inspection to determine the overall quality of the food being prepared. The origin of raw food material being delivered to the plant should be reported.

Inspection of Food-Canning Plant

Canning is a method of preserving food in hermetically sealed containers so that it can be safely eaten at a later time without recourse to refrigeration. The effectiveness of canning in destroying or suppressing micro-organisms in food depends mainly on the combined effect of time and temperature; but also, however, upon the composition of the food and its pH. Hazards due to spores of micro-organisms can be controlled either by an appropriate time/temperature combination or by lowering the pH of the food to below 4.6, which inhibits the growth of vegetative bacteria only. The first method is applied to low-acid foods and the second to acid or acidified foods. The control may seem simple; other factors must, however, also be considered. Too much heat may affect the flavour, texture, appearance, palatability or nutritional value of the food. A heat treatment (thermal) process must have a time/temperature combination that has maximum destructive effect on the micro-organisms and minimum effect on the quality of the food.

Low-acid foods

Raw materials. The inspector should obtain complete information on the firm's field management or procurement programme for harvested vegetables. He should check washing equipment and practices, obtain the brand name and list of ingredients if the firm uses cleaning solutions in wash and rinse water, and determine whether label directions are being followed.

Product preparation. The inspector should obtain detailed information on the firm's equipment-cleaning and sanitizing procedures. He should look for possibilities of high bacteria growth, such as areas where a food product can be trapped or held for a short period and then returned to the product stream. The bacteria that grow during this holding time will add to the normal bacterial load, and this could adversely affect the autoclave procedure. Thermophilic bacteria grow optimally at a range of 50 to 55°C. If part of the

processing operation takes place in this temperature range for extended periods of time, the inspector should determine how long the product is held at this temperature.

The inspector should observe blanching operations for temperature control and blanching time, and determine whether blanched foods are washed or cooled in potable water. If the blanched food is immediately canned and retorted, it can be handled at the elevated temperature at which it is discharged from the blancher. If it is to be handled or sorted after a blanching, then it should be cooled, not only to make it more comfortable for the sorters, but to drop the internal temperature of the product below the thermophilic growth range. Canned food products should be stored in such a manner that they do not become frozen or exposed to high humidity or excessive heat. These conditions can all cause stress on the container closure system.

Field examinations. The inspector should routinely examine the warehouse stock for evidence of defective lots, e.g., leaking cans, wet cases, swollen cans, swarms of fruit-flies or other insects around isolated pallets, etc. When inspection evidence indicates the probability that under-processed lots, or lots with excessive defective units have been produced, the inspector should conduct a visual examination of warehouse stock. He should give priority to examining the lot which was processed incorrectly, but any lot produced using the process, especially if warehoused for at least 14 days, can be examined. All containers in a single lot shall have the same production code.

Beverage Industry

The most usual causes of unsatisfactory products are foreign material in returnable bottles; glass in bottles; and mould in the product due to poor sanitation in the equipment.

1. Raw materials

- a) Water is the most important raw material used in manufacturing and should be from an approved source. The method of treating water used by the plant should be checked.
- b) Another important ingredient is sugar. Sugar-receiving equipment should be checked for cleanliness and sign of infestation.
- c) Flavours and colours should be stored off the floor, and should be checked to ascertain whether they are approved.
- d) New bottles, cans and bottle caps should not be exposed to insect or rodent activity or excessively dusty conditions.
- e) Special attention should be given to food colours to ascertain that they are food dyes and not textile or other industrial colours.

2. Bottle-washing

- a) Returned empty bottles should be checked prior to washing to remove foreign material and damaged bottles.
- b) The bottles may have been used to hold items which pose a threat of both bacterial and chemical contamination. This is especially true of bottles used for soft drinks and milk.

- c) A caustic solution, sodium hydroxide at 3 percent, heated to about 55°C, or other suitable approved solution, should be used in washing-machines to clean returnable bottles.
- d) Special attention must be given to rinsing with potable water in order to completely remove the cleaning solution.
- e) Mould in the product generally appears as dark-coloured, irregularly shaped particles.
- f) The bottle-washing machine cabinet and housing are sometimes heavily infested with insects such as cockroaches. There may be areas in the washer that, if not kept clean, will cause recontamination of the bottles after washing.
- g) The washed bottles should be checked prior to filling to eliminate any bottles that were inadequately washed and rinsed of cleaning chemicals, or that contain foreign objects that were not removed in the washing process.
- h) Bottles damaged in the washing process should also be eliminated.
- i) For visual inspection of the unfilled bottles, the inspection area should be properly arranged and lighted to give a good clear view of the bottles against a white background.
- j) The background should be free of dirt and objects that would hamper inspection of the bottles.
- k) Guards on the conveyor should be designed and placed to permit the best possible view of the bottles.

3. Bottle filling

- a) Exploding bottles may send flying glass into unfilled bottles approaching the filling equipment. Bottles being filled should be shielded to prevent this.
- b) In case of any bottle explodes, other bottles approaching the filling machine should be checked for broken glass pieces.
- c) Observations should include an estimate of the frequency of bottles being broken and the number of unfilled bottles exposed to flying glass at any given time. This should be followed by examination of the finished product in the warehouse to check for broken glass.
- d) Bottles should be examined before washing, after washing, and after filling in order to check the efficiency of the establishment's washing and inspection facilities. Several hundred bottles should be examined at each of these points.
- e) Detailed information on objectionable conditions encountered should be reported, and should include the number of bottles examined.
- f) The industry's cleaning and inspection of non-returnable bottles should be checked. Although these bottles do not present the same hazards as returnable bottles, they should still receive a wash or rinse prior to use, and the bottles should be checked for damage and foreign material.

4. Storage Conditions

- a) When beverages are stored under cool conditions, their storage temperatures shall be recorded and the cooling rate shall be adjusted in such a way that the products reach the required temperature at the earliest.
- b) Any container or tank used for transporting or storage of raw material, in-process product or processed product shall be cleaned and disinfected before re-use.
- c) Products intended to be stored at ambient temperature shall be cooled as quickly as possible to the temperature established by the manufacturer as suitable to ensure its durability and shelf life.
- d) Crates containing filled bottles should be stacked to a height maintained to prevent deformation/ compression of the bottom-most bottles/cans.
- e) Any leakage, spillage from cans/bottles should be cleaned off promptly to avoid cross contamination.

Meat and Meat Products processing

Meat is a valuable source of protein, but it is also an important potential source of disease if not properly prepared, following good hygienic practices. The examination of animals before slaughter (ante-mortem) is carried out or supervised by qualified veterinarians; properly trained inspectors can look for questionable conditions that can then be referred to veterinary judgement. The same is true of examination of animal organs and carcasses after slaughter (post-mortem).

Ante-mortem inspection:

This examination is designed to determine the fitness of the animal to provide meat suitable for human consumption. The inspector should check for evidence of animal abuse. Animals should be free from illness, infection, tiredness, etc.; reasonably clean; and transported to slaughter in a manner that will protect them from accidents in a conveyance that is clean and in a sanitary condition. Conveyance cleaning should include disinfecting to prevent transmission of disease. On arrival in the slaughterhouse area, the animals should rest for 24 to 48 hours in clean, airy stalls before slaughter. Care should be taken to prevent horning or other injuries during the waiting period.

Post-mortem inspection and laboratory control procedures:

Post-mortem inspection. In abattoirs, post-mortem inspection should be carried out immediately after slaughter. Its purpose is to ensure the detection of diseases and abnormalities, so that only meat fit for human consumption is passed as such. The inspection should be carried out by veterinarians or by specially trained inspectors under veterinarian supervision.

Routine post-mortem inspection should include viewing, palpation, and where necessary incision and sample-taking for laboratory examination. The inspection should be carried out in a hygienic and systematic manner.

Prior to the final examination, all parts required for the inspection of the animal should remain identifiable with the carcass.

Meat that has been passed by the inspector as fit for human consumption should be branded in accordance with local regulations. Brands and stamps bearing the marks of

inspection should be kept clean while in use, and should be held in the custody of the inspector and used only under his supervision.

Laboratory control procedures. In addition to the routine organoleptic examination carried out by the meat inspection services, it is essential that each meat establishment have access to a laboratory for control and diagnostic work.

Critical points in the inspection meat products :

- (a) both quality and hygienic control of meat and other raw products as they are received in the manufacturing establishment. The inner temperature and pH of meat should be recorded;
- (b) cleanliness, temperature and other storage conditions;
- (c) control of the manufacturing process all along the line to ensure clean and hygienic handling, proper composition, and conformity to prescribed standards for the means of preservation (heat treatment, salting, sugaring, etc.);
- (d) control of packing, packaging and storage conditions, and observance of prescribed holding times, validity periods, etc.;
- (e) observation of cleanliness and hygienic practices by food handlers;
- (f) sanitation of the premises, equipment and fittings, and their proper functioning;
- (g) control of transport and other means of distribution.

Fish and Fish Products processing

The main problems with fish and fish products are decomposition, insect infestation and parasites, as well as sanitation. The inspector should be alert for poisonous fish and fish parts.

Fresh fish raw material:

Incoming fish should be checked for decomposition. Some species of fish should also be checked for parasites and chemical contamination. The inspector should determine how effectively unsatisfactory fish are segregated and what steps are taken for their disposal.

Fresh-caught fish have a shiny, iridescent surface; the body is covered with a nearly transparent, uniformly spread, thin coating of slime; the eyes are bright and protruding, the pupil black and the cornea transparent; the gills are bright and appreciably free from slime. The odour of fresh lean fish is most often described as “marine-like” or “fresh-seaweed”; fatty fish have a pleasant “margarine-like” smell. Although the flesh is soft and flabby immediately after capture, as soon as *rigor mortis* sets in, it becomes firm.

After freezing, good fresh fish have a delicate, pleasant odour and flavour when cooked. If the fish is a little older before freezing, it is insipid; a lack of odour or flavour is noticeable. The limits of edibility are reached when amines, ammonia, and such putrid elements as hydrogen sulphide and indole can be detected.

In fatty fish such as herring, mackerel, sprat, tuna, salmon, and trout, oxidation leads to rancidity during storage. White-fleshed fish, such as cod and haddock, have a little fat, so rancidity is not a serious problem; these fish are also generally gutted soon after

capture, so the major cause of spoilage is not the digestive enzymes but, rather, bacterial activity. In colder climates, bacterial activity in carefully gutted, washed and ice-packed haddock starts increasing rapidly from the sixth to the sixteenth day. During *rigor*, bacterial activity is generally reduced, as the pH during this period does not favour microbial growth. Normal pH values during the *rigor* of fish such as haddock, whiting and related species lie between 6.2 and 6.6.

Different species of fish have different keeping qualities: whiting, for instance, will not keep as long as cod; this is true also under frozen conditions. Harvesting fish and maintaining quality during the summer are usually more difficult than in winter. Catches of the same fish from different fishing grounds will also vary in their keeping qualities.

Once landed, it is essential that the fish be unloaded as quickly as possible, minimizing bruising and rough handling, and conveyed to the initial processing area without undue delay. Microbiologically, the flesh and body fluids of fresh-caught ocean fin-fish are considered to be sterile, while the gills, intestines and skin slime can at times carry heavy bacterial loads.

The microbial flora of fish is altered in kind and number by handling and storage conditions on board ship. The decks, hold surfaces, and pen boards can be heavily contaminated if they are not properly constructed and cleaned. It takes several days for bacteria in the viscera of ungutted iced fish to invade the muscle. The main purpose of gutting quickly is to prevent autolytic decomposition. Washing is effective in decreasing microbial load, often up to 90 percent.

Using ice will also reduce the microbial load, but if the vessel's holds are improperly cleaned, the use of ice is of little value and usually merely alters the kinds of bacterial flora normally found in newly caught, ungutted fish that is not iced.

Product preparation:

The inspector should observe the gutting procedure, determining whether washing to remove all undesirable material after gutting is satisfactory, and checking that only acceptable water is used. He should determine whether there are any time or temperature abuses in the handling of the fish before final packaging and storage.

THE RETAIL MEAT SHOPS

For ensuring the hygiene and safety of meat being sold at retail meat shops, the following requirements need be ascertained under the supervision of the qualified Veterinary staff.

1. Location of Meat Shop

- i. The meat shop / sale outlet should be a unit of meat market located away from Vegetable, fish or other food markets and shall be free from undesirable odour, smoke, dust or other contaminants. Wherever a meat markets is not available, individual meat shop can be set up considering the above factors, which have a direct bearing on the hygiene conditions of the premises and health of consumers.

(a) The minimum distance between the licensed meat shop and any place of worship should not be less than 50 meters;

(b) The condition of 100 meters distance will apply in case the premises situated directly opposite to the entry gate of religious place of any community.

- ii. All the meat shops located in the vicinity of religious places shall be fitted with black glass doors, which must be kept, closed all times except in case of entry or exit. It must be the responsibility of the meat shop owners to maintain a high standard of hygiene not only inside the shops, but also in the way leading to the shops road pavements or other adjoining place, particularly for insanitary materials originating from the meat business for example, blood, part of offal, meat scraps.

2. Size of Meat Shops

- i. Considering the constraints of commercial space in residential areas in concerned *Panchayats* / Municipalities the size of meat shops may vary according to the size of business and activities being carried out there in the meat shops. However it will be desirable that shops are less than 4 sq m of floor area.
- ii. The height of shop in all above categories of meat shops should be not less than 3 meters, while in case of air-conditioned meat shops; it should not be less than 2.5 meters.

3. Premises

- i. The premises shall be structurally sound. The walls up to the height of minimum 5 feet from the floor level shall be made of impervious concrete material (e.g. glazed tiles or hygienic panels, etc.) for easy washing and cleaning purposes.
- ii. The floor should be made of impervious and non-slippery materials with a slope for easy cleaning and removal of filth, waste and dirty water. The slope of the floor shall not be less than 5 cm for a floor of 3 meters.
- iii. All the fittings in the stall should be of non-corroding and non-rusting type.
- iv. All processing tables, racks, shelves, boards, etc. shall have zinc/ aluminium/ stainless steel/marble-granite to facilitate proper cleaning.
- v. A sign board indicating the type of meat sold shall be displayed prominently. Nothing else but meat should be sold at the premises.
- vi. The premises should have provision of sewer connection for drainage of wastewater.
- vii. There should be provision of continuous supply of potable water inside the premises. In case the water supply is from bore well the arrangement for softening of water for making the same potable shall be made in the premises and intermittent adequate store arrangement should be made.
- viii. The door of the shop should be of self-closing type, and the sale counter should have a provision for small window with wire glass sliding. The door of the shop should be of dark glass top and be kept closed. No carcasses should be kept in a manner so as to be seen by the public view from outside.

4. Equipment and Accessories

- i. The meat shop should have suitable arrangement for fly proofing in the form of air-curtains, flytraps, etc.
- ii. It should have display cabinet type refrigerator of adequate size for maintaining a temperature of 4 to 8 °C. or freezing cabinet if the meat is to be stored for more than 48 hours.

- iii. The weighing scales used shall be of a type which obviates unnecessary handling and contamination and the sketch of the scale shall be made of stainless steel or nickel coated.
- iv. The knives, tools and hooks used shall be made of stainless steel. Sufficient cupboards or racks should be there for storing knives, hooks, clothes and other equipments.
- v. The chopping equipments should be cleaned with hot water at a temperature of 82 °C.
- vi. There should be a provision of geysers in all the meat shops to have hot water at a temperature not less than 82 °C to clean the premises and equipment used in meat shop.
- vii. Washbasin made of stainless steel / porcelain shall be provided with liquid soap dispenser or other soap and nail brush for thorough cleaning of hands.
- viii. The chopping block should be of food-grade synthetic material, which does not contaminate the meat. If the block is of wooden it should be of hardwood trunk, which is solid enough and should not contaminate the meat.
- ix. The rails and hanging hooks, if provided for hanging carcasses, should be of non-corrosive metal. The non-corrosive hanging hooks for carcasses shall be 30 cm apart and the distance between rails shall be 60 to 70 cm depending upon the size of animals slaughtered and carcasses hanged.
- x. A waste bin with a pedal operated cover shall be provided in the premises for collection of waste material.

5. Sanitary Practices

- i. The chopping block should be sanitized daily by covering its top with sea-salt, after cleaning it with hot water at close of business activity.
- ii. The refrigerated / freezing cabinet should be regularly cleaned and well maintained.
- iii. Slaughtering of animal / birds inside the shop premises should be strictly prohibited.
- iv. The carcasses shall not be allowed to be covered with wet-clothes.
- v. Wholesome meat obtained from the authorized slaughter house shall only be sold at the meat shops and a record thereof shall be kept in the premises to be shown to any officer of the concerned *Panchayats* / Municipalities responsible for local administration Corporation at the time of inspection.
- vi. Waste bins should be emptied, transported for disposal as per the arrangements made by the concerned *Panchayats* / Municipalities and waste bin / *dhalau* (burial pits) shall be treated daily with a disinfectant.
- vii. The premises shall not be used for residential purposes nor shall it communicate with any residential quarter. No personal belonging like clothing, bedding, shoes etc. shall be kept in the premises. Only dressed carcasses of clean meat shall be stored at the premises.
- viii. Hides, skins, hoofs, heads and unclean gut should not be allowed to be stored in the premises at any time.
- ix. The preparation of food of any type inside the meat sale outlet should be strictly prohibited.
- x. The meat obtained from unauthorized sources or unstamped meat is liable to be confiscated and destroyed.
- xi. Waste of the meat shop to be disposed off packed in heavy polythene bags in *dhalaos* (burial pits).

6. Transportation

- i. The transportation of carcasses from the slaughter house to the premises shall be done under hygienic conditions in boxes of adequate size linked with zinc/ aluminium/ stainless steel or wire gauze meat safes, which must be washed daily.
- ii. The transportation of carcasses from the slaughter house to the meat shops should be done in insulated vans refrigerated. Under no circumstances, carcasses will be transported in vehicles used for commuting of human beings, or in an exposed condition.

WHOLESALE FOOD STORE

1. Location and Premises

- a) Location shall be away from rubbish, waste water, toilet facilities, open drains and animals.
- b) Rubbish bin with cover shall be provided.
- c) Working area as well as the outside premises should be free from spilled powders or liquids, trash etc which may attract or harbour pests, rodents or micro-organisms.
- d) Conveyor systems should be free from evidence of insect activity.
- e) Cleaning agents / Insecticides / disinfectants should be labelled properly stored separately, away from food storing / handling areas.
- f) Containers used to hold cleaning chemicals and other dangerous substances shall be identified and stored separately to prevent malicious or accidental contamination of food.

2. Air Quality and Ventilation

- a) Adequate means of natural or mechanical ventilation shall be in place.
- b) Ventilation systems shall ensure that air does not flow from contaminated areas to clean areas and, where necessary, they can be adequately maintained and cleaned.
- c) The exhaust system should be installed with a metal hood properly connected to an air-duct fitted with an extraction fan of sufficient capacity.
- d) Fresh air supply system fitted with propulsion fans with adequate capacity should be installed.

3. Lighting

- a) Adequate natural and / or artificial lighting shall be provided in premises.
- b) Where necessary, lighting should not be such that the resulting colour is misleading. The intensity shall be suitable for the purpose.
- c) All lighting and light fixtures should be designed to avoid accumulation of dirt and be easily cleaned.
- d) Lighting fixtures shall be protected with shatter-proof covers to prevent broken glass from falling onto the food in the event of a breakage.

4. Pest Control

- a) Regular inspection shall be conducted atleast once in a fortnight for early detection of pest and to apprehend pest situations at the premises.
- b) Screens should be put on the open windows and doors.
- c) Insect electrocuting device (IED) should be provided at the premises for elimination of insects.
- d) IED is placed at least 1.5 m away from any food handling area.
- e) Low wall mounted type IED are used in the food establishment.
- f) Air screens (curtains) should be provided between clean and unclean areas.
- g) Threshold clearance of doors should be lowered to not more than 6mm with metal kicking plates or rubber sheets.

- h) In case of pest infestation, only permitted insecticides within permissible limits should be used avoiding food contamination.
- i) Any food that has been contaminated by pest control chemicals should be disposed off safely so that it would not be dispatched by any one accidentally.
- j) All food products should be kept covered while applying rodenticides and insecticides.
- k) Remains of pests/insects should be removed promptly.
- l) Disused articles or equipment shall not be stored in food premises
- m) Regular inspection shall be conducted atleast once in a fortnight for early detection of pest and to apprehend pest situations at the premises.

5. Food Handling and Storage

- m) Food shall be kept in such a manner to be protected from exposure to dust, droplet contamination, overhead leakage and condensation, flies and other insects, rodents, vermin, and any other deleterious substance.
- n) Food shall be stored in approved containers, at least 6 inches above the floor surface on approved shelving.
- o) All materials should be –
 - stored off the floor and away from walls
 - free from insect and rodent infestation or adulteration
 - free of contamination from other sources, e.g. birds, moisture, mould etc.
- p) Weighing practices should be adequate to ensure declared quantity of contents would be distributed.
- q) Storage shall not be done in containers of copper, cadmium, lead, non food grade plastic and other toxic materials.
- r) Adequate number of racks shall be provided for storage of articles of food, with clear identity of each commodity. Proper compartment for each class shall also be provided wherever possible.
- s) Adequate facilities for the storage of food, ingredients and non-food chemicals (e.g. cleaning materials, lubricants, fuels) shall be provided.
- t) Food and related products, and other hazardous materials like cleaning materials, pest chemicals shall be segregated and stored separately.

6. Time and Temperature Control

- a) Depending on the nature of the food adequate facilities shall be available for storing refrigerated or frozen foods, monitoring food temperatures, and controlling ambient temperatures and humidity to ensure the safety and suitability of food.
- b) Temperature recording devices shall be checked at regular intervals and shall be calibrated at appropriate frequency.
- c) Wholesale food store operators shall control temperature of the processes as indicated below:
 - Receiving temperature
 - Temperature of raw chill products on receiving shall be 4°C or below.
 - Temperature of frozen raw material on receiving shall be -18 °C or below
 - Storage temperature – Potentially hazardous food shall be stored:
 - at or below 4°C or at or above 60°C; and
 - frozen if they are intended to be stored frozen (at -18°C or below).
 - Refrigerators for storing perishable food should be kept at a temperature not exceeding 10°C, preferably at or below 4°C.
- d) A thermometer should be provided to each refrigerator indicating the temperature at which the food is being stored.
- e) Temperature recording devices shall be checked at regular intervals and shall be calibrated at appropriate frequency.

7. Food Dispatch and Distribution

- a) All packaged food products shall carry a label and requisite information shall be there as per provisions of Food Safety & Standards Act, 2006 and Regulations & Regulations made there under so as to ensure that adequate and accessible information is available to the next person in the food chain to enable them to handle, store, process, prepare and display the food products safely and correctly and that the lot or batch can be easily traced and recalled if necessary.
- b) FIFO (First In First Out) and First Expire First Out stock rotation system should be applied to release the food products from the store.
- c) Expired material should be discarded and not enter into the dispatching process.

8. Transportation Facilities

- a) The vehicles used to transport foods must be maintained in good repair and kept clean.
- b) Foods while in transport in packaged form or in containers shall maintain the required temperature. Conveyances and containers for transporting food shall be kept in an appropriate state of cleanliness, repair and condition.
- c) For bulk transport, containers and conveyances shall be designated and marked for food use only and be used only for that purpose.
- d) Conveyances and containers for transporting food shall be kept in an appropriate state of cleanliness, repair and condition.
- e) For bulk transport, containers and conveyances shall be designated and marked for food use only and be used only for that purpose.
- f) The vehicle used for transport shall not carry animals, toxic substances or contaminating materials along with the prepared food.
- g) Food shall be adequately protected during transport.
- h) Conveyances and bulk containers shall be designed and constructed so that they:
 - do not contaminate foods or packaging;
 - can be effectively cleaned and, where necessary, disinfected;
 - provide effective protection from contamination, including dust and fumes;
 - can effectively maintain when needed the temperature, humidity, atmosphere and other conditions necessary to protect food from harmful or undesirable microbial growth and deterioration likely to render it unsuitable for consumption; and;
 - allow any necessary temperature, humidity and other conditions to be checked.

9. Waste Disposal

- a) Proper care shall be taken while disposing plastic /metal / glass materials, bags, containers and others which are not environment friendly.
- b) Containers for waste, by-products and inedible or dangerous substances, shall be specifically identifiable, suitably constructed and, where appropriate, made of impervious material.
- c) Containers used to hold dangerous substances shall be identified and, where appropriate, be kept under lock and key.
- d) Waste storage shall be located such that it does not contaminate the food storage areas, the environment inside and outside the establishment.
- e) Waste shall be kept in covered containers and shall not be allowed to accumulate in food handling, food storage, and other working areas.
- f) Periodic disposal of the refuse / waste be made compulsory. No waste shall be kept open inside the premise and shall not be discharged outside the premise, on the road or drainage system.

10. Maintenance of Records

- ee) Every wholesale dealer in butter, ghee, vanaspati, edible oils, Solvent extracted oil, de oiled meal, edible flour and any other fats shall maintain a register showing the quantity of received or sold, as applicable and the destination of each consignment of the substances received at and sent out from his place of business, and shall present such register/record for inspection whenever required to do so by the licensing authority.
- ff) Wholesale food store operators should maintain records for control of temperature at receiving, storage and dispatch of material.
- gg) Records shall be maintained for the regular checking and calibration of temperature recording devices at appropriate frequency.
- hh) Records of pesticides / insecticides used along with dates and frequency shall be maintained.
- ii) Appropriate records of receiving, storage, distribution, cleaning and sanitation, pest control and product recall shall be kept and retained for a period of one year or the shelf-life of the product, whichever is more.

Food Service and Distribution

(Including Markets, Restaurants, Vendors, Caterers and Retail Stores)

Open-air markets

The guidelines presented in here apply in a general way to all open-air markets. Temporary food dispensing and cooking operations include fair concessions, roadside stands, open-air-type municipal and farmers' markets, trucks, trailers, vans, cars and other vehicles.

Efforts should be directed toward educating vendors about the health hazard associated with flies, birds, rodents and other vermin. Over time, control measures should be introduced to protect food from flies and other potential contaminants.

The hawker who sells one or two commodities should also observe basic hygienic measures to protect the consumer from environmental contamination and infections likely to be introduced during hawking. Such activities, which involve a quick turnover of fresh or cooked foods, should be conducted on concrete surfaces for easy cleaning, and there should be a source of approved water.

Produce markets.

- (a) Each stand or establishment should provide adequate hand-washing facilities including water, soap and suitable hygienic means of drying hands.
- (b) Fruits and vegetables on display, or their immediate container, should not be in contact with the ground. Unsheltered displays should be high enough above the ground surface to prevent contamination from any source.
- (c) Dust and dirt on premises should be controlled to prevent contamination of produce.
- (d) Insects and other pests should be controlled to prevent contamination or infestation of produce.

Meat, poultry and fish markets.

- (a) Perishable foods should be protected from contamination.
- (b) Frozen items should be transported, stored and sold at — 18°C or below.

- (c) Fresh perishable foods should be kept cool during transport and storage. Fish should be stored at a temperature as close to that of melting ice as possible.
- (d) Eggs should be stored and displayed for sale at temperature and relative humidity levels that will minimize deterioration, having regard to local climatic conditions. Temperatures between 8 and 15°C and relative humidities between 70 and 85 percent have been found satisfactory.
- (e) Each stand or establishment shall provide adequate hand-washing facilities, including water, soap and suitable hygienic means of drying hands.
- (f) Dust and dirt on premises should be controlled to prevent the contamination of foods.
- (g) Insects and other pests should be controlled to prevent contamination or infestation of foods.
- (h) Only a limited amount of perishable foods should be on display. If the market lasts all day, the bulk should be stored in a cold-store or room, or in an insulated container.

Retail stores

The inspection of food stores and markets will require the inspector to use his own personal knowledge and experience of what constitutes a wholesome food. Indications of spoilage are generally bad smell, unusual colour and changed consistency. Packaged foods are always suspect when the package shows that it has been mishandled, abused or is otherwise not intact or not complying the provisions of labelling requirements.

The inspector will need to be alert to problems that may arise in the market or store, such as unsanitary conditions that could contaminate unpackaged foods, possible interruption of electrical power where refrigeration and freezing equipment must operate continuously to preserve the food, and possibilities of accidents that could compromise the protective seal of packaged foods.

Food Service Establishments (restaurants, cafeterias and catering establishments)

The preparation, handling and serving of foods in quantity to large groups of people provide ample opportunities for the spread of food-borne disease, either sporadically or in epidemic proportions. There are certain specific characteristics of public eating and drinking establishments that make them potential focus of food-borne outbreaks or epidemics:

- (a) food is prepared in relatively large quantities with many people eating the same dish. A single infection may thus affect many people simultaneously;
- (b) much of the food is prepared in advance of the normal mealtime rush, and may be prepared by temporary and untrained help. Improper storage or display during this “waiting hour” can provide an opportunity for bacterial contamination and multiplication;
- (c) the actual operation of food serving is concentrated within a few hours during which time the utensils and dishes must be rinsed several times. These rush hours tend to

encourage poor and unsatisfactory methods of dish-washing, thus creating opportunities for food-borne disease outbreaks.

This means that very strict sanitary and safety measures should be adopted in all public eating and drinking places, and that the utmost vigilance should be exerted in controlling them.

The Catering/ food Service establishment in which food is being handled, processed, manufactured, stored, distributed and ultimately sold to the customers and the persons handling them should conform to the sanitary and hygienic requirement, food safety measures and other standard as specified below.

It includes premises where public is admitted for repose or for consumption of any food or drink or any place where cooked food is sold or prepared for sale. It includes:

- a) Eating Houses/ *Dhaba*
- b) Restaurants & Hotels
- c) Snack Bars,
- d) Canteens (Schools, Colleges, Office, Institutions)
- e) Food Service at religious places
- f) Neighbourhood Tiffin Services / *dabba walas*

I. FOOD PREPARATION AREAS

The following rules apply to rooms where food is prepared. There will be no smoke nuisance in the food preparation area. Wherever cooking or frying of any kind is being done, a chimney having appropriate suction capacity as per the size of the kitchen has to be installed prior to start of business.

II . Hand washing facilities and toilets

1. Adequate number of wash-hand basins made of porcelain/stainless steel shall be provided along with soap to wash hands, with hot and cold running water, and materials for cleaning hands and drying them hygienically. Clean and dry towels shall be kept for the use of customers.
2. Separate sinks must be provided, where necessary, for washing raw food and cleaning equipment.
3. Sinks with a draining board, detergent and hot water shall be provided to ensure proper cleaning of utensils, crockery and cutlery there will be a separate place for washing pots and pans.
4. There must also be enough toilets and those must not lead directly into food areas.
5. There shall be separate Sinks for washing utensils and raw food items

2. Changing facilities:

Adequate facilities for staff to change their clothes, where necessary must be provided.

1. Cleaning

- Food areas and equipment between different tasks, especially after handling raw food shall be cleaned.
- The surface shall be thoroughly cleaned in case if somebody spill some food / water / drink.
- A systematic cleaning schedule and instructions has to be developed by the FBO.

- Food handlers should strictly follow the systematic cleaning schedule to make sure that surfaces and equipment are cleaned when they need to be.

The schedule should include:

- what needs to be cleaned
- how often it needs to be cleaned
- how the cleaning should be done

Cleaning instructions should indicate:

- what cleaning products should be used
- how the products should be stored (away from raw, cooked, packed food) and used
- how much they should be used or diluted
- how long that should be left in contact with the surface (following the manufacturer's instructions)

2. **Raw materials**

1. Raw materials shall be purchased from reliable and known dealers and checked for visible deterioration & off- odour.
2. Food ingredients shall be segregated from materials which are evidently unfit for human consumption.
3. There should be no physical hazards and foreign body contamination.
7. All raw materials should be checked & cleaned physically as well as in potable water thoroughly.
8. Raw materials should be purchased in quantities that correspond to adequate storage/ preservation capacity.
9. Packaged raw material must be checked for 'expiry date'/ 'best before'/ 'use by' date, packaging integrity and storage conditions.
10. Receiving temperature of potentially high risk food should be at or below 5 °C.
11. Receiving temperature of frozen food should be -18 °C or below
12. Raw paste, sauces etc. should be stored in properly covered containers made of food grade material and checked regularly for fungal growth, deterioration etc.

Preparation of fruits/ vegetables:

- 1) Fruits and vegetables that have been protected from cross-contamination and properly conserved should be used.
- 2) Fruits and vegetables should be used after removing parts or items in poor condition.
- 3) Whole fruits and vegetables should be washed in potable water before being cut, mixed with other ingredients. Uncooked, ready-to-eat fruits & vegetables should be with 50 ppm chlorinated water before cutting, peeling or serving.
- 4) Fruits and vegetables should be peeled, squeezed and/or cut, as appropriate, with clean equipment/ utensils made of non-absorbent food grade materials.
- 5) Previously prepared fruits/vegetables should be kept in clean and properly covered food grade containers under refrigeration or at a maximum temperature suitable for the product in question.

Preparation of Non-veg. Products:-

- 1) Raw meat and processed meat should be separated from other foods; items and surfaces.
- 2) Separate items (e.g. cutting boards, dishes, knives) and preparation area for raw meats and poultry and marine products should be used to avoid cross contamination of food.
- 3) Hands should be thoroughly washed before switching from preparing raw meat or poultry or marine products to any other activity.
- 4) Ensure proper cooking of all non veg. products.
- 5) Used surfaces should be washed with antibacterial cleaning agent, rinsed properly with water and sanitized after preparing raw meat/poultry.
- 6) Ensure that frozen products are thawed as per point no. 10 under high risk foods

3. Cooking

- a) The preparation/ processing/ cooking should be adequate to eliminate and reduce hazards to an acceptable level which might have been introduced at the raw food level.
- b) The preparation/ processing/ cooking methods should ensure that the foods are not re- contaminated.
- c) The preparation/ processing/ cooking of veg. & non-veg. products should be segregated.
- d) Food should not be overcooked (e.g. charring) leading to chemical hazards.
- e) Whenever cooking or reheating of food is done, it should be hot all the way through. It is especially important to make sure that food is cooked thoroughly because there could be bacteria in the middle of food.
- f) Re-use of cooking oil should be avoided

4. Chilling

- Semi cooked or cooked dishes and other ready-to-eat foods such as prepared salads and desserts having short shelf life should not be left standing around at room temperature.
- Chilled food on delivery should be cold enough.
- Food items that need to be chilled should be put straight away into the fridge.
- Cooked food should be cooled as quickly as possible and then put it in the fridge.
- Chilled food should not be kept out of the fridge except for the shortest time possible during preparation.
- Fridge and display units should be cold enough and as per requirement.
- In practice, fridge should be set at 5°C to make sure that food is kept in chilled condition. Also, fridge and display units should be maintained in good working condition to avoid food spoilage and contamination.

4. Cross-contamination

Following things should be done to avoid cross - contamination.

- Raw food/ meat/poultry and ready-to-eat foods should be kept separate at all times.
- Hands should be thoroughly washed after touching raw meat/poultry.

- Work surfaces, chopping boards and equipments should be thoroughly cleaned before the preparing of food starts and after it has been used
- Separate chopping boards and knives for raw fruit/ vegetables/ meat/poultry and ready-to-eat food should be used.
- Raw meat/poultry below ready-to-eat food should be kept in the fridge.
- Separate fridge for raw meat/poultry should be kept.
- Staff should be made aware how to avoid cross-contamination.

PERSONAL HYGIENE

1. High standards of personal hygiene should be maintained.
2. All employees handling food should wash their hands properly:
 - before preparing food
 - after touching raw food or materials, specially meat/poultry or eggs
 - after breaks
 - after using the toilet
 - after cleaning the raw materials or utensils / equipments
3. Staff working with food must wear suitable clean clothes and where necessary, shall wear head cover, apron, musk mouth and use gloves etc.
4. Street shoes inside the food preparation area should not be worn while handling & preparing food.
5. Food handlers should ensure careful food handling & protect food from environmental exposure.
6. Food handlers should avoid following practices while handling food:
 - Chewing or smoking tobacco
 - Chewing betel nut or gums
 - Touching mouth, tongue, nose, eyes or other body parts
 - Spitting, sneezing, coughing, etc.
 - Touching ready-to-eat food with bare hands
 - Handling food and money at same time
 - not to wear watches or jewellery while preparing food
7. All food handlers should be medically fit and free from diseases.

TRANSPORTATION & HANDLING OF FOOD

- 1) The vehicle/transportation being used to carry cooked/prepared/processed food should be clean, should be dedicated for this purpose and should not carry anything else.
- 2) Time required for transportation should be minimum, to avoid microbial proliferation.
- 3) Cooked food served hot should be kept at a temperature of at least 60° C to prevent microbial growth.

- 4) Cooked food to be served cold should be kept below 5^o C to prevent growth of pathogens. Otherwise time of holding should be limited.
- 5) All foods during transportation must be kept covered and in such a way as to limit pathogen growth or toxin formation by controlling time of transportation, exposure, temperature control and using safe water for cleaning etc.
- 7) Handling of food should be minimal. It should be ensured that utensils, crockery, cutlery and specially hands of the food handlers/seller are clean and sanitized.
- 8) All surplus food and unused thawed food should be discarded.
- 9) Food to be kept for cold storage should be distributed in small volumes to ensure uniform cooling.
- 10) It is recommended that even dry, fermented and acidified foods should be stored in a cool and dry place.
- 11) All packaged food viz. sterilized milk, bottled beverages; canned foods should be stored properly during transportation to ensure that seals remain intact and undamaged.

I. STORAGE

1. It is very important to store food properly for the purpose of food safety. Following things must be ensured:
 - Foods should be cooked, stored and kept at right temperature
 - Raw meat/poultry should be stored separately from other foods
 - Vegetarian foods should always be stored above non-veg. foods and cooked foods above uncooked foods on separate racks in the refrigerator.
 - Food after the 'use by' date should never be used, because it might not be safe to eat.
 - Storage temperature of frozen food should be -18°C or below.
 - Storage temperature of potentially high risk food should be at or below 5°C.
 - Cooked food to be eaten later should be cooled quickly, and kept it in the fridge – it can be practiced to put date on food packages or containers, using stickers or any other way of identification ,before keeping inside the fridge to keep track of food prepared date wise and use accordingly to minimise wastage .
 - Food with short shelf-life should be use first
 - Storage instructions over food packaging should be followed.
 - Dried foods (such as grains and pulses) should be stored off the floor, ideally in sealable containers, to allow proper cleaning and protection from pests.

2. Stock rotation

The rule is FIFO (first in, first out) to make sure that older food is used first. This will help to prevent wastage.

SPECIAL REQUIREMENTS FOR HIGH RISK FOODS

This section deals selectively with few varieties of food which are high risk as per HACCP and may need special attention. The type of foods covered here are as follows:

1. Cut fruits/salads, fresh juices and beverages

- 1) Fresh fruits /vegetables cut or juiced should be used immediately; however, short storage should be only under refrigeration in sanitized and properly covered vessels.
- 2) Water used in beverages should be potable.

- 3) Ice used should be made of potable water only.
- 4) Food or beverages should not be stored in the same container used to store the ice intended for consumption.
- 5) Juice concentrates must be checked regularly for any fungal growth / change of colour, odour or gas formation in the bottle.
- 6) Juice dispensing machine should be cleaned and rinsed with water regularly.
- 7) Containers made of food grade material should be used for collecting juice.
- 8) Clean and intact utensils/crockery & cutlery / disposables should be used for serving.

2. Confectionery products

- 1) Prepared confectionery products should be kept in airtight containers and displayed hygienically.
- 2) Cream to be used is stored covered under refrigeration.
- 3) Finished products should be refrigerated with proper labels indicating date of expiry.
- 4) Products should be properly wrapped/ packaged after proper cooling.
- 5) Only permitted food additives (colour, preservatives, flavouring agents etc.) should be used.

3. Meat, poultry & fish products

- 1) Non veg. products/raw materials should be purchased (chilled products temperature should be at 5°C or below and frozen products at -18°C or below) from authorized/ licensed slaughter houses/vendors.
- 2) Processing area should be cleaned and disinfected promptly.
- 3) Preparation and processing of meat, poultry and marine products should be separate.
- 4) Non-veg. products are washed with potable water before use.
- 5) Non-veg. products are cooked thoroughly (core temperature 75°C) for at least 15 seconds or an effective time/temperature control e.g. 65 °C for 10 minutes, 70 °C for 2 minutes.
- 6) Non-veg. products should be stored covered in refrigerator below the veg. products.
- 7) Raw and cooked products should be stored physically separated with cooked products at the top.
- 8) All refuse/waste should be promptly removed from preparation area.

4. Milk & dairy products

- 1) All equipments and utensils should be thoroughly washed and rinsed with potable water before starting of work and at the end.
- 2) All mechanical equipments should be routinely cleaned, checked and maintained.
- 3) All products should be routinely checked for spoilage/contamination and shelf life.
- 4) Any spoiled/contaminated product should be promptly removed and discarded.

- 5) Milk should be received in clean and hygienic conditions at temperature below 5°C.
- 6) Milk and milk products should be used immediately or pasteurized and refrigerated.

5. Water based chutneys, sauces etc.

- 1) All fruits/vegetables should be washed properly before processing.
- 2) Clean and disinfected chopping boards/grinding stone/machine should be used.
- 3) Personal hygiene of food handlers need to be ensured.
- 4) Water used in the chutneys should be safe and potable.
- 5) Only permitted food additives should be used, if required, and in added in recommended quantities only.
- 6) Spoiled products should be discarded immediately after confirmation of spoilage (change in colour/ texture/ odour).
- 7) Sauces and chutneys should be stored in glass/food grade plastic containers with proper lids.
- 8) Clean and intact containers should be used for storing sauces and chutneys.
- 9) Sauces and chutneys should be stored in refrigerator when not in use.
- 10) Perishable/uncooked chutneys should be consumed immediately.

6. Foods transported to point of sale from the point of cooking

- 1) Food should be reheated up to 70°C before consumption.
- 2) Food should be consumed within 4 hours of reheating.

7. Foods with Gravy

- 1) Food products should not be stored at room temperature for more than 2 hours during display or sale.
- 2) For prolonged storage, foods should be stored in refrigerators or kept for hot holding at or above 60 °C.
- 3) No water should be added after cooking/reheating/boiling.

8. Fried Foods

- 1) Proper quality / branded oils/fats should be used for food preparation, frying etc.
- 2) Use packaged oil only.
- 3) Use of oils with high trans fats (like vanaspati) should be avoided as far as possible.
- 4) Re-heating and reuse of oil should be avoided as far as possible. Therefore, avoid having leftover oil wherever possible.

9. Post Cooked Mixing

- 1) Ingredients added to the cooked food should be thoroughly washed/ cleaned.
- 2) After cooking or post cooked mixing, the food should be used immediately.

3) Garnishes etc., if added should be prepared using fresh, thoroughly washed and freshly cut vegetables and used immediately.

10. Thawing of Frozen Products

1) Frozen products should be thawed in refrigerator/microwave/convection oven or under running potable water well before cooking.

2) Only required portion of the food should be thawed at a time.

3) Thawed products should be used immediately and not refrozen or kept in chillers.

Food Warehouses

Warehouse inspection is important in preventing food losses. On this basis, the following detailed inspection procedure is outlined with the recommendation that food warehouses be inspected on a regular basis:

- (a) note rodent harbourages and burrows outside the building, and check the exterior and entrances for access of pests;
- (b) note any evidence of rodent, bird, or insect traffic near doors, along walks, between or under pellets, along rafters, on window ledges and along the perimeter of the storage area, and note whether excreta pellets are new or old;
- (c) check the area designated for damaged merchandise as a possible contributing source of rodent and insect contamination of nearby foods held for sale;
- (d) be alert for misuse of rodenticides and pesticides; note if tracking powder is spread indiscriminately throughout the warehouse; determine the composition of rodenticides and pesticides in use and note whether liquid rodenticides are kept in locked anchored bait-boxes; determine whether the management is aware of the products used by the exterminator.
- (e) determine whether and how the firm examines incoming materials for signs of contamination, and determine the disposition of goods found to be contaminated;
- (f) determine whether the firm rotates products properly, and whether lots are properly identified to help with stock rotation;
- (g) examine products susceptible to direct contamination such as macaroni products, cereals, nuts, beans, flour, dried fruit, poppy and sesame seeds, etc. to determine whether there is any contamination, including that from rodents, insects and birds, either on the outside of the containers or inside retail packages. During the examination, the inspector should check under and around pallets for broken and leaking containers and for evidence of contaminants in the spillage under the pallets, e.g., pellets, tacks, insects, etc.;
- (h) where foods are stored directly on the floor or against walls, check adjacent floor areas and accessible wall surfaces for signs of rodents and insects;
- (i) examine the firm's refrigerators and freezers to ascertain whether they are in proper working order and whether air is circulating effectively inside the units:

- (i) refrigerators should be maintained at or below 4°C;
- (ii) freezers should be maintained at or below — 23°C;
- (iii) evidence of thawing of frozen foods should be looked for;
- (iv) the firm's practices for rapid placing of incoming frozen or refrigerated foods into appropriate storage, and for shipment of such products to customers should be checked, to ensure proper handling.

(k) include examinations for swollen cans, damaged merchandise, and other factors that render goods unfit for food, and check on labelling and economic violations. Individual lots of canned goods should be inspected and an official sample collected only when and obviously bad lot is found.